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Harlan Ellison has recently emerged victorious from long bouts with a movie script and with pneumonia. We have high hopes that his writing column will resurface in the next issue.

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There is a journey whose end is its beginning...



by Rudy Rucker

Prologue

They called it "Us" then instead of "America." As in the popular slogan, "Us is Users and Users is Us." The Governor said that in most of his speeches, which always ended, "Us needs you 'cause you're Younique."

Which was a load of crap, natch. There were Drones and there were Dreamers, and that was about as unique as it got.

The Drones lived in robot-built suburbs. In the daytime they rode the walk-tubes to their offices in the City. Their main job was to fill out probing questionnaires.

The Dreamers lived together in vast apartment blocks. It was easy to spot a Dreamer because of the socket in the base of the skull. If you were a Dreamer, you plugged a wire like a phone cord into that socket every night.

The Drones' questionnaires and the Dreamers' brain-waves all ended up inside Phizwhiz, a vast network of linked computers and robots. Phizwhiz always knew what the Users wanted. If what they wanted was impossible or unsafe, then it was Phizwhiz's job to change the Users' minds before they found out that they wanted something impossible or unsafe. Phizwhiz did this by continually adjusting the Hollows, which everyone watched.

Hollows were holograms . . . three-dimensional, full-color, life-size images which talked and flickered all day long. Everyone had a small padded room called the "Nest" with a Hollows receiver on the floor. In your Nest you could lean against the soft wall and be on a yacht in the Mediter-

anean, or alone with the Governor while he told you a secret; at the scene of a Public Safety raid, or in bed with a friendly and beautiful couple.

It was all so real that the Users, Drones and Dreamers alike, wanted little else from life. Which was just as well, since Phizwhiz had come to do all the real work there was to do. This was partly because of human laziness, and partly because Phizwhiz had been programmed to value human life above all else. People had tended to hurt themselves when they worked in factories, fields, and laboratories. So by the time 2165 rolled around, Phizwhiz had it set up so that the average User never touched the controls of anything more dangerous than a cold-water tap.

It was an easy life, and with Phizwhiz picking your brain and manipulating the Hollows, you'd usually been psyched into dropping a gripe before you knew you had it. Usually. But there were some problems which were hard to forget about. Like the fact that the machines never did anything quite right. And the fact that there were no real changes anymore. No new inventions, no new ideas, not even any really new shows on the Hollows. Phizwhiz was happy, but Us was bored.

It occurred to someone that Phizwhiz might be more creative if a few human brains could be built into the network. The Governor appealed to the Dreamers to come plug their brains into Phizwhiz's full logical space, and a few ambitious volunteers turned up.

This kind of hook-up was something quite different from the gingerly probing of the Dream Machine, that electronic poll-taker which nightly

monitored the collective response of the Dreamers' brains to various weak currents and waveforms. In fact, *full* brain interlock with Phizwhiz caused overwhelming thought amplification and information overload, and turned all of the sane and healthy people who tried it into drooling undersirables within seconds.

It began to look like the Users were stuck with their tepid, steadystate society. But then the Angels appeared.

I/Vernor Maxwell

Vernor Maxwell grew up in a Dreamtown high-rise. When he was thirteen his father took him in to get his plug installed, and the family was awarded a new receiver for the Hollownest. At first the plug frightened him, and he would lie awake for hours while the alien images and sensations trickled into his brain from the Dream Machine. Soon, however, he began to feel a certain pleasure, almost sexual, at the dark nightly joining of his mind with all the others. Sometimes he would imagine bright impulses passing out of his plug, through the Dream Machine, and into some young girl's pure brain. The older kids bragged about actually plugging their brains directly into their girlfriends' brains, and they would show Vernor the short lengths of co-axial cable which they used.

There was no school; the Hollows' morning line-up of kiddie shows provided all the education that the Users' children would ever need. No one checked if the kids watched the shows, but they didn't have to. The shows were fun, and Vernor rarely missed them. When he got bored he would

fool with the controls on the Hollow receiver until the Nest was filled with flying blobs of light and fragmented images. After awhile his mother would come in and yell at him to fix it. He would retune so that the Hollows took on their normal wavering and grainy appearance, then go out in the street to play with his friends.

By the time he was sixteen, the "play" consisted mainly of getting twisted on tranks and seaweed. Users generally took the two together, transisteroid tranquilizers and reefers of seaweed. Seaweed was a mutated aquatic strain of *cannabis sativa*. All you had to do was drop a seed into a bucket of urine, and six weeks later you had a half-pound of seaweed. The grownups said you'd go crazy if you smoked it without taking tranks to smooth the trip, and they may have been right; but the kids continued to function pretty well after they discovered that tranks just took the edge off the weed.

A lot of Dreamer kids were into electricity, too, feeding it raw through their skull plugs. You could hook a regular dry-cell battery to your plug; it would make you come for half an hour if you did it right ... and pass out in convulsions if you did it wrong. Of course, batteries were illegal, but they weren't too hard to get. Not much harder than the drugs, which were legal for anyone over eighteen. Legal and illegal were not, after all, very important concepts in Dreamtown. The City had a police force, known collectively as the loach, but the loach tended to stay out of Dreamtown. The Hollows kept down any large-scale unrest which the Dream Machine detected, and most Dreamers didn't own anything worth stealing.

The more sophisticated kids sent *pulsed* electricity from hand-cranked dynamos in through their plugs and called themselves electrofreaks. Vernor tried it a couple of times, had an epileptic fit, and gave it up. He had begun to wish he didn't have a plug at all. There was a passive, addicted feeling to plugging in every night, and lying there hooked in with all the other Dreamers, fleshly components of Phizwhiz. After spending a night with the soft knob at the back of your neck, while thoughts and feelings ebbed and flowed through the coiled cable, you never really knew what they had put in and what they had taken out. Some mornings you felt like you had dreamed everyone's dream, all tangled together, and you couldn't meet peoples' eyes ... but no one talked about it.

When he was twenty, Vernor started hanging around the library. Since there were so many people and so few real jobs, there was no encouragement to be anything other than a Dreamer; but if you were interested, you could study just about anything with the taped Hollowcasts in the library. Vernor was interested in science, and he went through most of the introductory science courses which had been taped. Physics and mathematics attracted him in particular, and soon he had exhausted the library's supply of tapes in these areas.

It became necessary to learn how to read. The Hollow shows had taught him letters, numbers, and the phonetic reading of short words, but he had never actually read a book. The first book he read was Abbott's *Flatland*, and its archaic language and bizarre ideas fired his imagination. Months

ran into years as he pursued his studies of Quantum Mechanics, General Field Theory, Geometrodynamics, Relativistic Cosmology, Mathematical Logic, and the Philosophy of Science.

He discovered that if he slept on a table, the cleaning robots would not disturb him, so he began spending his nights in the library. That way he no longer had to plug into the Dream Machine. If he slept at home it was impossible not to plug in, for the bed had a weight sensor which set off a "reminder bell" if the bed's occupant was not properly plugged in.

There was even a Dreamfood tap in the library's lounge, so he soon stopped going home entirely. When he told his parents he was living in the library, they were proud ... until they discovered that Vernor was not learning a technical skill which might give him a chance of someday having a job. Being a Dreamer was, of course, a job of sorts ... every day's Hollowcast to Dreamtown ended with a slogan intended to encourage this belief: "Us needs you because you're Younique!" But no amount of propaganda, no number of Hollows of the President saying, "Us is Users. Dream Us our tomorrow," could erase the Dreamers' sad and hidden knowledge of their uselessness.

But to study physics and mathematics? What was the good of that? There were no physicists any more, although being a physicist was not expressly illegal. What *was* illegal was to conduct experiments in a laboratory. It was too dangerous ... dangerous to the experimenter, and dangerous to the society that he might use his new discoveries on. Mathematics and theoretical physics were legal, but no one

would pay people to do them, the common conception being that Phizwhiz was much better at science than any human could be.

Like all common conceptions about science, this was false. Phizwhiz was not much of a scientist. He knew enough to question old hypotheses, but he had no access to that inner vision of the Absolute which shines through the work of the true scientist.

Vernor had heard of the Us's attempts to give Phizwhiz soul by plugging him into certain Dreamers' minds, and he sometimes felt that if anyone would ever be able to survive such an experience it would be Vernor Maxwell. He took many strange trips lying on his library table, smoking seaweed or tripping on LSD. He had seen the world go solid and shatter into dust, leaving only a pure shimmer of abstract relations. He had watched the gnat of his consciousness speed urgently across his inner landscape as another part of himself tried to catch and dissect it, naming all the parts for once and all. He no longer could tell the difference between a good trip and a bad trip ... or rather this artificial distinction had fallen away.

One day the news spread that a man had entered into full communication with Phizwhiz and survived. Vernor watched him in the Hollownest of a bar near the library. The man's name was Andy Silver. To the viewer in the Nest, Silver appeared to be leaning against one wall.

Silver had blond hair and a funny way of holding his elbows out from his body. He smiled often, though not necessarily in synchronization with what he was saying. Occasionally he did not appear to know where he was,

but this did not seem to disturb him. An invisible voice, which the viewer could imagine to be his own, interviewed Andy Silver.

"Are you the guy that plugged into Phizwhiz last week?"

Silver glanced around, then stared at a spot to Vernor's left. "You bet your ass," he replied.

"What was it like, Andy?"

Silver began pacing around the room. "What's *anything* like? Real compared to what?" He paused, then continued, "Let's say it's like walking in a garden of light. And every flower is a number. And every number is your name..." His voice trailed off and he sat down, looking quietly across the room like a man with all the time in the world.

"How is it, Andy, that you managed to come unscathed through an experience which has shattered the minds of all the others who attempted it?"

"You call this unscathed?" Silver shot back, bursting into laughter. "No, seriously, gate, it was no big deal for me. I've been taking LSD every day for ten years now so most of my brain's gone anyway..." For an instant his eyes rolled and his head seemed to be on fire, but then he continued, "All kidding aside, Jim, I've been studying metamathematics, and actually I was in just the right place to get on top of Phizwhiz. LSD and a good scientific training's all it took. Couldn't have done it without the Professor, though."

"Which Professor are you referring to, Mr. Silver?"

Silver seemed puzzled at the question, but then he gathered himself to recite, "My beloved teacher, Professor G. Kurtowski, without whose writ-

ings and conversations I could never have reached this point."

"Thank you, Andy Silver, the first man to survive a full brain interlock with Phizwhiz. And now, Users, it is our great privilege to welcome the Governor."

The Governor's Hollow walked into the Nest. He was an amazingly evil-looking man who perpetually held his beeth bared in what he imagined to be a smile. Silver gave him the finger, but the Governor brushed past him and stepped forward to buttonhole the Users.

"Always glad to see you," he began. "You're Younique!" This was his standard opening. He continued, "We are fortunate to have in our fine City a man whose courage and strength of character open the exciting vista of a revitalized Phizwhiz before us."

Silver had turned around so that his back faced the Governor. Curious, Vernor walked across the Hollownest to get on Silver's other side so as to see his face. That was one of the nice things about Hollows: a complete three-dimensional image of the actors was always there in the Nest with you. If someone turned his back to you, you could still see his face by moving to the other side of the room.

Silver was leaning forward confidentially over his cupped right hand. "Hey, man, glad you were hip enough to come over here," he whispered. The Governor was still extolling the bright future in store for the lucky Users in his care. Silver raised his hand and continued, "You know what I got in this hand? ZZ-74, man. That's what really put me on top. ZZ-74." He winked, then turned back to his origi-

nal position facing the Governor's fat, talking back.

ZZ-74? Vernor had never heard of it before. No one else in the bar's Nest had bothered to go hear Silver's secret message, but surely many others in the City had. ZZ-74? His attention was drawn back to the Governor's speech.

"We need more Andy Silvers. I urge any citizen who feels able to withstand the titanic mental pressure of merging with the greatest computer the world has ever seen to come forward. Andy Silver is going to put together a team of Dreamers willing and able to get Phizwhiz moving again. More than ever before ... Us is Users and Users is Us!" The Governor seemed about to leave, but struck with a sudden afterthought, he turned to Silver, "Andy, what do you want to call this team of men?"

Silver looked at the Governor coolly. "The Angels," he said. "We'll be the Angels."

They gave Silver a floor in the main Phizwhiz building downtown, and the next day Vernor was there. Half the Dreamers in town seemed to have gotten there before him. After waiting two hours to get into the building, he gave up and went back to the library. It might, after all, be wise to study some more science and ride out a few more heavy trips before putting his mind on the line. Maybe the whole thing was a hoax, a trick by the Governor to get acid-heads to volunteer for some kind of brain obliteration. LSD was legal, but there was no doubt that the Governor did not like acid-heads.

But Andy Silver's feat was not a hoax, as became evident over the next few months. New gadgets began appearing in the stores. The shows on the

Hollows improved greatly. There was a rash of exciting fads. The laws against gardening and painting were dropped and many people took up these enjoyable, but slightly dangerous hobbies. One man went on a rampage, killing six with his gardening tools, and paintings and slogans which were not good for the public to see began appearing on the sides of buildings and in the walktubes; but Andy Silver prevailed upon Phizwhiz to let the gardening and painting continue. There was even talk of legalizing laboratory science again.

The Us was not entirely happy with all the changes in Phizwhiz's behavior which Andy Silver was bringing about. For his part, Silver made no secret of his revolutionary sentiments ... occasionally going so far as to state that Phizwhiz should be destroyed. But the public was so enchanted with the life and excitement which he had brought that it would have been politically impossible to arrest him — even if the Us had been sure it wanted to.

Silver had assembled a core of four other Angels from the many who had volunteered. Most people never made it past the initial screening, and all the rest, except the four new Angels, failed the actual machine test ... losing their minds in the process. Applications for a position with the Angels dropped off drastically as the word of this got around, and Vernor could now have gotten in for a test easily enough, but he hesitated to do this. It would probably be better to get some ZZ-74 first.

A number of other people had heard Silver mention ZZ-74 on the Hollows. Lots of people, including the loach, were looking to score some, but there wasn't any around. The general con-

sensus was that ZZ-74 must be a drug which was being manufactured in an underground laboratory ... perhaps by the mysterious Professor G. Kurtowski.

Since the Us had not yet been able to obtain and analyze a sample of ZZ-74, they could not be sure that it was safe, so it was declared illegal. The government was all too eager to legalize ZZ-74, if only they could find the formula and swing into production. A good demand for the stuff had built up on the strength of Silver's mention of it, and the Us was not adverse to making hay while the sun shines. They asked, then demanded, that the Angels surrender their cache of the illegal substance, but to no avail. Finally a raid was staged, but no unfamiliar drugs were found in the Angels' possession.

Vernor followed all this with interest, and he began looking into the writings of G. Kurtowski. His early papers were concerned with ironing out various imperfections in the Everett-Wheeler many-universe interpretation of quantum mechanics. Toward the end of his publishing career, however, a number of surprising empirical predictions had begun to appear in his papers. Vernor was unable to discover if the experiments which Kurtowski suggested had ever been carried out, and Phizwhiz seemed to have no information at all on what the Professor had been doing for the last twenty years. Evidently Kurtowski was alive in an underground laboratory somewhere.

Again, Vernor was tempted to try to join the Angels, but again his caution held him back. He was twenty-three. He might have spent the rest of his life in the library, preparing for an ever-

receding future, but one day Andy Silver came to see him.

2/The Happy Cloak

Most days the library was practically deserted. There would be a few people viewing tapes in the small Hollownests around the first-floor lounge, and maybe a couple of people punching questions into the Information Terminal in the middle of the lounge; but Vernor usually had the upstairs to himself. It was here that they had the microfiches with the marvelous access and viewing system that made picking out and reading any book in existence no harder than reaching across a desk and turning a dial.

On an average day the only interruptions were from the cleaning robots. Occasionally someone might wander up and spend a few hours at one of the other viewers, but never before had someone come up to read over Vernor's shoulder. He turned in some annoyance and immediately recognized Andy Silver's ethereally cynical face.

"I've been thinking about you a lot," Vernor said, standing up. "You got any of that dope?"

Silver smiled at and through Vernor. "Vernor Maxwell," he said, "I came out here to find you."

"How'd you know I was here?" Vernor asked.

"The Professor told me. He keeps an eye out for people who read his stuff and ask about him. You want dope? You'll get it, don't worry." Silver felt in his pockets. "You got any seaweed on you?"

"Sure," Vernor said. "This is

where I live. Just a minute." Vernor kept most of his possessions wedged under a couch's cushions. He lifted up a cushion and took out a stick of weed. "This is really good shit," he said, "I grew this under ultraviolet light."

"High energy," Silver said, lighting up and inhaling deeply. "You want to be an Angel, Vernor?" Just like that.

"I don't know if I can handle it," Vernor confessed. "That's why I haven't come in for a test."

"It's not as hard as you think," Silver said. "It's just the squares who can't handle it. You know how to trip, right?" He passed the reefer to Vernor.

"Yeah." Deep drag.

"Most people don't. I mean, hardly anyone does. They know how to get wasted, or how to get high, or how to feel good, or how to pick the nose, or bleed on the floor, or booga-loo, or WHAT," Silver suddenly shouted. "WHAT AM I TALKING ABOUT?"

"Tripping," Vernor shot back.

Andy Silver chuckled through his smile. "You'll be O.K. Let's take a walk."

They finished the seaweed on the way out to the street. It was good stuff, and being with Andy Silver provided an amazing contact high as well.

They walked a few blocks in the gathering dusk. Vernor wanted to ask about Professor Kurtowski, but the stoned silence was too comfortable to break. As they drew abreast of a staircase which led down through the sidewalk to the walk-tubes, Silver suddenly pressed something into Vernor's hand.

"Take this," he said. "It'll help you study." And then he was gone.

It was a small pill the size of an

aspirin tablet. "ZZ-74," Vernor murmured reverently, and swallowed it.

He spent the rest of the night wandering the streets of Dreamtown. ZZ-74 was different ... a new place. Around dawn, he returned to the library. It was locked for the night and he sat on the steps. What had happened during the last twelve hours? He recalled a phrase from a book called *Ascent to the Absolute*, "... of some of our packed thoughts it is as proper to say that they are very rich in distinct items as that they are wholly void of any distinct items at all..." What was ZZ-74? What was anything? That night, even before the testing, Vernor Maxwell became an Angel.

He spent the next day recuperating, and the day after he went in for his test. The Angels' operation had expanded to include a whole building, christened the Experimental Metaphysics, or EM, building. It was not that a building's worth of technicians, secretaries, data analysts, standing committees, et cetera, was in any way necessary for the Angels' activities. It was just that so little was happening in the Drones' lives that they came hungrily buzzing around when there was a scent of real action.

At the EM building, Vernor found a few other young Dreamers applying for membership in the Angels. Only one besides Vernor made it through the initial screening to be sent upstairs for a machine test. The other was a pretty girl, and they rode up in the elevator together.

Vernor looked at her hungrily. They might both be dead in an hour. Sadly he compared their healthy young bodies, imagining the delights they could give each other. He was practically a

virgin ... he'd had his share of playful romps, but never a real liaison. He could make out the shape of her full labia through the taut fabric of her pants. He moaned softly.

"Are you scared?" she asked suddenly. He raised his eyes from her crotch to her face. She was looking at him pleasantly, openly. "Because, I am," she continued. "I'm not going to do it. I just decided."

"You're not..." he said, finally breaking the eye contact, "Oh, I'll do it. I met Andy Silver. He told me it would be easy for me." As he said these words they sounded false to him. At the advice of a madman he was going to plug his brain into the world's biggest machine?

"You met him?" The girl was interested. "What was he like?" The elevator was coasting to a stop.

"Weird. We got high and he gave me some ZZ-74." Saying the name of the magic drug worked like a charm on Vernor. Suddenly his confidence returned and he stepped from the elevator. "What's your name?" he said, holding the door.

"Alice," she said. "Alice Gajary."

He hesitated a moment longer. "And you're going back down?" She nodded. "If I make it can I come see you tonight?" She nodded again, and as the elevator doors closed she said, "32 Mao Street. Come for supper."

A white-coated lady beckoned to Vernor and he followed her down the hall. The guide nodded at the various rooms they passed, explaining their functions. The artificial intelligence laboratory — a whole roomful of marvelous-looking technical devices — caught his eye. A man was sitting at a bench cutting a thick sheet of plastic

with a heavy-duty industrial laser. Safety precautions seemed to be minimal here.

"And here," the guide was suddenly saying, "is where you drool or fly." She opened a door and he entered to find two men waiting for him. One was a technician bent over a bank of dials, the other was a Japanese man wearing street clothes.

"My name is Moto-O," the latter said, stepping forward. "I am the newest Angel, and will supervise the test." No smiles.

Vernor sat down in the chair they indicated. He started violently when the technician slipped a plug into the socket at the base of his skull, but Moto-O gestured reassuringly.

"Phizwhiz is not turned on, Mr. Maxwell," Moto-O said. "You decide when." He indicated a rheostat dial on the panel in front of Vernor. "You make it to five, and you are Angel," he explained, finally smiling.

The switch was a dial with the numbers zero through five on it. At present it was set at zero. Moto-O and the technician moved away from Vernor, and he was alone with the machine. Clearly the idea was to inch up to five, hang on for a minute, and whip back to zero.

Cautiously, Vernor turned the dial just the tiniest bit towards one, and then, feeling only a slight tickle, jumped it to two. He closed his eyes to savor his impressions. "A garden of light," Andy had said, and that wasn't far wrong.

Patterns formed and dissolved faster than Vernor could objectify them. That is, he would *experience* a certain train of thought with its concomitant association blocks, but the

whole mental structure would turn into a new one before he could step outside of it and *record* it. As yet, however, the thoughts did not feel much different from his ordinary thoughts, though it was hard to be sure. It felt pretty good, actually.

He felt light-headed, reckless. He reached out and turned the dial up to five with one motion. Only after they unplugged him ten minutes later did he have time to try to form a description of what full brain interlock with Phizwhiz felt like.

As he told Alice at supper that night, it was like suddenly having your brain become thousands of times larger. Our normal thoughts consist of association blocks woven together to form a network pattern which changes as time goes on. When Vernor was plugged into Phizwhiz, the association blocks became larger, and the networks more complex. He recalled, for instance, having thought fleetingly of his hand on the control switch. As soon as the concept *hand* formed in his mind, Phizwhiz had internally displayed every scrap of information in his memory banks related to the keyword *hand*. All the literary allusions to, all the physiological studies of, all the known uses for *hands* were simultaneously held in the Vernor-Phizwhiz joint consciousness. All this as well as images of all the paintings, photographs, X-rays, Hollows, etc., of *hands* which were stored in Phizwhiz's memory bank. And this was just a part of one association block involved in one thought network.

The thought networks were of such a fabulous richness and complexity that it would have been physically impossible to fit any of them into Vernor's un-

plugged brain. Once Moto-O disconnected him, they were gone.

"Wait," Vernor cried, "I was just about to get the whole picture." He had a feeling that some transcendent revelation had been cut short.

Moto-O laughed in delight, "You were almost going to *be* the whole picture. One more minute and ... wearing the Happy Cloak."

Suddenly Vernor remembered that this had been a test. "I'm an Angel now?"

"Oh yes," Moto-O replied. "I welcome you." He shook Vernor's hand.

The technician looked up from a bank of dials and nodded at Vernor. "The system is definitely energized, Mr. Maxwell. You do good work."

"That's what I don't get," Alice asked after Vernor related the experience to her over the supper she had prepared. "If you have so much better associations and so much more complicated thoughts when you're plugged in to Phizwhiz, why does he even need *you*? I mean, it's not like you're adding a whole lot of brain space to the machine."

"It's not my memory or switching circuits that Phizwhiz needs," Vernor responded. "It's my consciousness ... my ability to discriminate. Inside Phizwhiz it's like a sea of information. The whole time I was in there I was picking out pieces and putting them together into patterns. It was sort of like listening to static until you hear voices."

"Can't Phizwhiz form patterns of his own?" Alice asked.

"Only the ones which follow logically from his initial program," Vernor explained, then added, "Actually he can pick out *random* patterns as well. But he can't do what a person

can do ... put together thoughts which are neither so predictable as to be boring nor so random as to be nonsensical."

"So he just needs your good taste?" Alice was smiling warmly. "I taste pretty good, you know."

In the space of three heartbeats Vernor's cock reached full erection. He went to kneel by her chair and began kissing her open face.

3/Alice Swims

Vernor moved in with Alice and began working with the Angels. Once a week he would go in for brain interlock with Phizwhiz. The next few days would be spent in trying to remember what had happened, and then he would start preparing for the next session.

As far as Phizwhiz was concerned, no preparation on Vernor's part was necessary — all that was needed from Vernor was his ability to form thoughts. Vernor, however, liked to try to use the sessions to work on his math and science.

The first few times he went in to the EM building, he had prepared a mental structure of facts and speculation, a perfectly built fire awaiting the kindling sparks of ZZ-74 and brain interlock. Since, however, he remembered so little of these mental conflagration, Vernor's preparations became increasingly desultory.

At first he spent most of his extra time doing things with Alice ... going to museums, youth orgies, outdoor Hollows, or just wandering around the City ... but as the months wore on he began spending the larger part of his

time getting high at the Angels' hangout, Waxy's Travel Lounge.

One place Alice loved to go was to the City's Inquarium. On the six-month anniversary of their meeting, Vernor pulled himself together and took her there. Their relationship had begun slowly to erode, and it seemed important to have a good time on this outing.

They paid at the Inquarium's entrance and left their clothes in the dressing room. Vernor wore rented swimfins, but Alice had her own custom-made fins, yellow with red stripes and long trailing edges.

"I want to look like a guppy," Alice explained, fastening yellow and red streamers to her best parts. Mesmerized, Vernor reached towards the streamers.

"No, *no*," Alice said, dancing away and flipping into the tank. Vernor jumped in after. The Inquarium was a huge tank, some ten meters deep and hundred meters square. The tank was filled with salt water and stocked with fish of every type and description. It was possible to rest on the bottom of the tank watching the fish and dallying with your mermaid, since breathing masks were bubbling at the ends of their hoses all over the tank's bottom.

Vernor looked about under the water. His vision was clear, as he was wearing special full-eye contact lenses. The breathing masks looked like a field of dandelions gone to seed, far below him. Alice was kicking down past a large grouper and through a school of parrot-fish. The streamers from her breasts flowed back like pectoral fins, and the streamers from between her legs tugged at her cuntlips in a way that Vernor longed to emulate.

He was swimming hard for the bottom, but he hadn't taken a big enough breath. He was forced back up to the surface before he could reach the air masks. He gasped a full lungful and dove again.

Without Alice in view, Vernor paid more attention to the full tank's appearance. It was as if he had shrunk to a few inches in size and jumped into a five-liter home aquarium. There were large seaplants the size of trees. Dolphins whizzed to and fro, filling Vernor's ears with their squeaks and clicks. Schools of smaller fish darted and wheeled like single multi-celled organisms. A large, pugnosed fish seemed rather too interested in Vernor's swim fins.

With a last mighty kick, Vernor scared off the fish and reached the bottom. He grabbed a foaming air mask and pressed it to his face, breathing deeply. The air was spiked with extra oxygen and perhaps a hint of nitrous oxide. Exhilarating! Hanging on to a convenient coral branch, Vernor looked around for Alice.

Soon he was rewarded with the sight of a yellow and red fluttering from behind a nearby reef. With a last lungful of air he pushed off and swam over to find lovely Alice lazing there, her breasts floating, a school of fishies jarting in her lap. She took a hit from her air mask and passed it to Vernor, her lips parted in a slowly bubbling smile. He pulled on her streamers and glided forward.

Passing the mask back and forth, and with fishies swarming between their legs, they fucked down there. The bubbles from their breathing mingled together and formed a silver curtain around their heads. At the last instant,

Alice pushed Vernor away and he ejaculated into the water, the semen immediately jelling into an opalescent and ropy network, upon which the fish feasted.

They swam up, dressed and went out on the street again, Alice pausing to pick up something at the entrance desk.

"What's that?" Vernor asked.

"It's a Hollowtape of us doing it down there," Alice giggled. "I wanted to have some nice pictures of us, so I phoned ahead to arrange it."

"And that's why you pulled back so I'd come in the water?" Vernor asked. "So that your grandchildren would know that it wasn't a fake?"

"Oh, Vernor, I just felt like giving you a shove. That was fun." She looked at him warmly. "We can watch it in bed tonight."

They walked along in comfortable silence for a few minutes, not a thought in their heads. Soon, however, Vernor felt the familiar boredom coming back. He wanted to consume.

"You want to get something to eat?" he asked Alice.

She smiled and shook her head.

"How about going over to Waxy's?" That would be good. Some weed and a few beers.

"And watch you get stoned out of your mind as usual? No thanks."

"Aw come on, Alice, I just want to see my friends."

"But not me, right?"

"Look, Alice, we've talked about this before. I can't spend my whole life with you." How he longed to be in the pleasant darkness of Waxy's. "Look, I just remembered, I told Mick I'd meet him to work on some new ideas." This was bullshit, and Alice could tell.

Hopelessly, Vernor continued, "You better not wait up for me."

Alice stopped walking. "You wanted to be a scientist, Vernor. Now you just get stoned and let that parasitic machine suck out your mind. You think you're a genius, but geniuses *do* something with their lives."

This line of attack had become overly familiar to Vernor over the last few weeks. It was especially annoying because he couldn't deny it.

"What is matter? What is mind?" Alice said, mimicking Vernor. When he had started out as an Angel he had thought that his sessions with Phiz-whiz would help him to answer these questions, and had often bragged about this to Alice.

He still discussed these questions with the other Angels, and there were times when it seemed that they had arrived at genuine answers ... but the "answers" they found were always a little unsatisfying when he wasn't stoned in one way or another. Doing the actual, hard, grinding work necessary for really scientific investigations no longer seemed possible to Vernor, now that he was plugging in to Phiz-whiz once a week. Why break your ass working out the field equations for a hypothetical energy configuration when you could plug in and do the problem in your head in seconds? The drawback of this procedure was that once you unplugged from the computer, you were not likely to remember the specific mathematical solutions which you had obtained with the machine's aid. It was not merely that the solution was too complex to remember, it was that it had been obtained so rapidly that it was never permanently fixed in the mind.

So Vernor had the feeling of great mental prowess without having anything concrete to show in the way of achievement. He knew that he wasn't really getting anywhere, with science, with philosophy, with Alice, and when she reminded him of this again on the street near the Inquarium it was too much to take.

"Fuck you, Alice," he said, wanting to stop as soon as he began. "I've had enough shit from you, you stupid bitch." Why was he saying this? He wanted to apologize, take it back, but already her lost face was years away from him, untouchable. Her move.

"Goodbye, Vernor." She started to say something else, then choked back tears, gave him a terrible smile and hurried ahead.

"Alice," he was suddenly shouting, running to catch up, "Alice, I didn't mean that!"

She turned, all grief refined to bitterness. "You don't know what you're doing anymore, Vernor. I don't want to be part of it. It's too sad." Again she hurried off, and this time Vernor watched her go. He looked at his watch. Five thirty. Might as well go over to Waxy's.

The last conversation with Alice played over and over in his mind as he walked. She was right, sure, but she wasn't an Angel, not even a head, really. He smoked a stick of weed on the way over, bringing his thoughts away from the past and into his surroundings.

Dreamtown. Nobody working, but everyone with a little money in their pocket. Street action was picking up as the evening drew on. Dope dealers moved along the sidewalks unloading the night's supply. Hemispherical

robots glided along the curb cleaning up the day's refuse. There were home-shops selling tawdry pieces of plastic furniture equipped with small Hollowcasters to cover them with an image of luxury, restaurants selling Dreamfood molded and dyed to look like old style food, and stores selling pornographic Hollowtapes. Illusions were the stock in trade.

Vernor stopped to watch a street magician, an intense man with a cable leading from his head socket to a Hollowcaster at his feet. The magician kept a constant play of images dancing in a three-meter radius about him. Most were abstract ... clouds and stripes of color ... but some of the images were more realistic. Donald Duck paced glumly around the magician, wearing a trench into the ground while black smoke issued from his ears as Daisy Duck beaked softly between the magician's legs.

A fire-breathing lizard came scampering up to Vernor, rearing up on its hind legs to display a bright blue erection. As Vernor watched, the erection swelled and the lizard shrank ... until the erection had turned into a large piggy bank.

The slit of the piggy bank moved and said, "Got a penny for the old guy?"

Unpleasantly surprised, Vernor kicked at the Hollow, but there was nothing really there to kick. His foot passed through the image and emerged covered with blood. Lightning bolts shot towards him from the magician's head and a voice of thunder said, "Let's have that donation, buddy."

All of his bad feelings from the fight with Alice came welling back up and he walked up to the magician, address-

ing him directly. "You're fucking with an Angel, douchebag."

The magician grinned at Vernor, sizing him up. A douchebag appeared and swatted at Vernor's face. "I can take you," the magician said. "Duel?"

Dreamer duels were not uncommon. The idea was something like plugging in to a girl's socket while you made love. Only in this case the goal was not ecstatic union, but rather the annihilation of your partner.

Vernor snapped the plug into his socket and stood glaring at the magician, who slowly dissolved along with the rest of the street scene. Animals and energy patterns came at him, easily avoided and shunted aside. It was nothing compared to plugging into Phizwhiz. Vernor began flashing a series of images, connected in unusual ways to form a pattern of unpleasant strangeness. The corny lightning bolts and leaping tigers from the magician's brain began to look confused. Vernor stepped up the assault. It was easy, too easy, to take his present mood of despair and loneliness and project it out at this man, to show him that everything was nothing.

Suddenly the circuit broke. The magician had unplugged. He looked at Vernor with frightened eyes. "You win, Angel." Vernor unplugged, nodded, and walked on. At least he could do *something* right.

4/Waxy's Travel Lounge

Ten minutes later Vernor arrived at the Angels' hang-out, Waxy's Travel Lounge. It was early evening and the place was beginning to fill up.

There was a sculptured black plastic bar along the left wall. The area in front of the rear wall was occupied by a Hollowjuke, and there were booths along the right wall.

The Hollowjuke was running, and the image of a larger-than-life couple doing sixty-nine occupied the rear of the room. The Hollow couple were singing a muffled duet punctuated by a yas-yas chorus from four Hollow massage robots busy hosing the lovers off.

The booths on the right seemed to be occupied. Noises of sex came from some, and over the door of some of the others you could see the bottles of intravenous feeding set-ups, dripping mixtures of methadrine, synthoin, vitamins, and glucose into the arms of those inside.

There was a group of Angels near the bar and Vernor walked over. An Angel called Oily Al was describing his latest attempt to build a flying machine. Apparently he stole pieces of machinery from the factory where he worked, and reassembled them in his own mad scientist fashion. Vernor didn't know him too well, but tended to stay out of his way, as Al was something of a practical joker.

As Vernor walked up, Oily Al looked at him, shouted, "Have a drink," and pitched the contents of a thermos he was holding in Vernor's direction.

It appeared to be a boiling liquid, and Vernor dove to the floor to avoid it. Strangely, however, the steaming liquid turned into a cloud of gas before it reached Vernor. As the gas diffused, the coals on the Angels' reefers brightened, and Vernor realized that it had been liquid oxygen.

"Man, you looked funny, scrambling around," Oily Al said, helping Vernor up. "Let me buy you a hit of seenz." Al punched the order into the bar robot and fed in the coins. The robot extended a tube towards Vernor and he put it in his nose, snorting up the synthetic cocaine. His adrenalin dissolved in a rush of well-being and he was finally able to return Oily Al's grin.

"What's happening?" Vernor asked.

"Moto-O's been looking for you. He's over there." Al pointed down the bar. Moto-O was sitting near a light, writing rapid precise symbols with his rapidograph. Vernor thanked Al for the seenz and walked over to Moto-O.

"Ah, Vernor," the Japanese said looking up, "I have a new idea for the mechanical mind." Vernor and Moto-O were both interested in the problem of how one might go about making a machine which would be conscious.

The problem was challenging, since the Second Incompleteness Theorem, proved by Kurt Godel in 1930, seems to say that no machine *can* be conscious, i.e., aware of its own existence. The reason is that the only way a machine can be aware of itself is to form an internal model of itself and look at the model ... and it is impossible for *anyone*, man or machine, to fully know himself.

To see why this might be so, try to become completely conscious of yourself and all your thoughts. Easy, you may say, no problem. But wait, did you include the act of examining your thoughts when you made your mental inventory of what's going on in your head? And once you tack that one on

will you be able to include the act of tacking it on? And that inclusion?

The problem is that every attempt to fully map your inner landscape adds new features to it. The map has to include a picture of itself, which has to include a picture of itself, and so on forever. No matter how fast you move your mental reference point, you're always a jump behind.

It's easy to see that a computer would run into the same type of problems when it tried to get a "mental" image of itself. But how is it, you may ask, that we humans do, after all, seem to have consciousness and self-awareness? It cannot come from internal modelling, so how does it arise? Well it's ... easy to do, but hard to describe. "Be Here Now" is one slogan that sort of captures the idea, but that's not too helpful if you're interested in programming a machine. As a matter of fact, Godel's *First Incompleteness Theorem* says that there *is* in fact no way to describe how it is that we do it.

Moto-O had spent a few years studying Zen, and he seemed to think that the answer to their problem was contained in the principle of the Zen *koan*, an apparently nonsensical problem (e.g. "What is the sound of one hand clapping?") with which beginners wrestle in an effort to break the shackles of rationality.

"Consciousness is paradox," Moto-O was saying now to Vernor at Waxy's bar. "But we exist in paradox. I raise my finger and all the world is there."

"I don't see how you plan to program this into Phizwhiz, Moto-O," Vernor responded, sipping a beer.

"I plan to split Phizwhiz's work-

space into two parts which monitor each other. One part will say 'This statement is false.' The other part will try to decide if the statement is true or false. The first part will evaluate the truth or falsity of the other part's decision. Infinite regress."

"'This statement is false,'" Vernor mused. "If that's a true statement then it's false. And if it's false, then it's true."

"Exactly. This trick is the heart of Godel's original proof." Moto-O grinned and took a swallow of speed-tea. "Phizwhiz needs a built-in paradox, like a human, to be alive."

"But won't he just reject the program after finding the loop? Won't he refuse to assimilate it?"

"Phizwhiz needs a firm master," Moto-O replied. "When I enter the program, and before he can reject it, I will administer a tripled operating voltage surge to him."

"Like Rinzai hitting the monks with his stick?" Vernor asked, referring to the Zen master Moto-O had talked about the most.

"Yes," he answered, "and a more technical reason is that the voltage surge will cause his memory banks to open so that the loop can be forced in."

"I don't know," Vernor said finally. "I doubt if Phizwhiz'll stand still for it, though I know that he does want someone to program a soul for him. Are you going to actually try it?"

Moto-O nodded vigorously. "Oh yes. Tomorrow I will talk to Mr. Burke of the Governor's Research Council. If they give approval, I will begin real work on the technical aspects."

Vernor thought about Moto-O's

ideas, to the extent that he could. *What is this that I am?* What if Moto-O really was successful ... would they still need the Angels once Phizwhiz could think? His reveries were interrupted by the prick of a needle in his biceps. He turned around to see Mick Stones pocketing an empty syringe.

"It's just a shot away," Stones grinned.

Vernor rubbed the spot on his arm nervously. A tingling was spreading up towards his head. "What the fuck was that?" he asked, but Stones was already dancing across the room. Mick Stones had been the first person after Andy Silver to become an Angel. His scientific and philosophic learning was minimal, but he had probably survived more trips than any three Angels combined.

Mick's main concern in his Phizwhiz sessions was to disrupt the functioning of the mechanical brain ... to freak it out of its program. Vernor, Moto-O and a few of the others were more concerned with using the sessions to advance the cause of science, but the avowed purpose of Andy Silver, Mick, and most of the others was to radically alter Phizwhiz's functioning.

Occasionally Mick treated people the same way. There was really no telling what he had shot Vernor up with. Vernor started across the room after him, but the roar of the drug hit him before he made it, and he stood rooted in the center of the room, twitching to the beat of the Hollow-juke.

It was an electronic number now, played by robots, squat machines with mechanical hands fingering dials on

their "chest." The rhythm shifted constantly, as Vernor's stimulated brain hungrily followed the sound's convolutions. He began to dance, and danced through the rest of the song and into the next. When one song ended the accompanying images would disappear, and a new set of Hollows would be beamed out by the Hollowjuke.

The image for the new song was two-dimensional, not that Vernor, in his state, could tell the difference. It was a classical recording, the Rolling Stones doing "Gimme Shelter." The surf music introduction seemed to last several minutes. Vernor was dancing hard. The wild power of the main part of the song came on and the room faded. "If I don't get some shelter/ yeah, I'm going to fade away," came Jagger's voice, fatalistic over the god-like and authoritative surge of Richards' guitar. A girl was screaming, "It's just a shot away, shot away, shot away, shot away," falling, Alice? Mick held something out to him ... which Mick? Vernor danced harder, eyes open, eyes closed. The song drove to its conclusion, "It's just a kiss away, kiss away, kiss away, kiss away." A shot or a kiss? Alice or Mick?

The drug wore off as quickly as it had come on. He was looking into Mick Stones' face. "Shelter," he said, "Gimme shelter."

Too disoriented to form a question about the last few minutes' events Vernor followed Mick back to the bar. "Is Alice here?" he asked finally.

"I saw her a while ago," Mick said, "She gave me this for you." He handed Vernor a suitcase. His stuff. The Angels were all he had now. "You

want to sleep at my place?" Mick was asking.

Vernor shook his head, "I'm going to move back to the library. Starting tomorrow I've got to get myself back together." He felt shaky and frightened. The shot or the kiss?

"Have you seen Andy?" Mick asked.

"No," Vernor answered. "It's been awhile. I thought he was staying with Professor Kurtowski."

"Yeah," Mick said, "but I was just over at Kurtowski's. He hasn't seen Andy in a week."

Moto-O had wandered over. "Last week I saw Andy at the EM building," he put in, "he said he was preparing for the 'biggest trip.'"

Mick Stones shook his head slowly. "That's what I was thinking he did. We better go look for him."

"What do you mean?" Vernor said, looking from one to the other. "You think he took an overdose?"

"No," Mick answered, "it's the machine, not the dope. Every time he went a little farther into Phizwhiz. He had the idea that he could *stay* inside the machine and take over ... live there as 'a stable energy configuration circulating freely among the memory banks and work spaces!'" Mick had said this last phrase in a sarcastically precise intonation, but the next sentence came straight from the heart: "He was getting tired of coming down."

"We had better go to the EM building and look for him," Moto-O said.

The three of them hurried out and rode uptown in a robot taxi. The door of the EM building was programmed to recognize the individual Angels' voiceprints, and it let them in. They

hurried upstairs, checking all the places where Andy Silver might have installed a private hook-up to Phizwhiz. Finally they found it.

It was a spare room of the cybernetics lab. Vernor was the one who opened the door, and he saw Silver's body lying on the floor, a thick cable leading from his head to the panel of a Phizwhiz implementation. Apparently he had been plugged in for several days. His body was completely inert, and it seemed certain that he was dead.

Mick rushed forward to unplug his old friend, but to his amazement his hand went right through Silver's lifeless form. It seemed to be a ghost ... no, a Hollow of Andy Silver. Suddenly the image moved to turn its face towards them, and it spoke, fading as they stood there.

"Tell them I was a martyr for the Revolution," the voice said. By the end of the sentence, the image of Andy Silver before them had dwindled up into the cable to Phizwhiz, leaving only a slowly dying chuckle behind.

5/Vision

Mick Stones took over as the head of the Angels. Silver had left him his stash of ZZ-74, and Stones seemed to know how to find the mysterious Professor Kurtowski to get more of the stuff whenever it was needed. Vernor was eager to be taken to see the great man, but Mick kept stalling on it.

It was hard to tell what had really happened to Andy Silver. They never found his body, so they couldn't be sure he was really dead — or that he had ever really existed. Some claimed

that Silver had been a Hollow all along, a fantasy of Phizwhiz. It seemed more likely, however, that Andy was a person who was somehow alive inside Phizwhiz.

The evidence that he had survived assimilation was indirect. It seemed that after Andy Silver's disappearance, Phizwhiz's behavior became more radical, more provocative. This could, of course, simply have been the cumulative effect of all the Angels' work; but some of Phizwhiz's aberrations seemed to have Andy's distinctive touch.

For instance, the next time the Governor made a speech, something "happened" to the sound track and it sounded like he was drunkenly asking the public at large to turn themselves in to be cooked down to oil for Phizwhiz.

Several days later USISU, the national daily newspaper, printed the secret locations of Phizwhiz's main components along with detailed descriptions of their mechanized defense systems. Incredible things began appearing on the Hollows; for instance, an animated cartoon serial based on the works of S. Clay Wilson, one of the depraved Zap artists of the mid-20th century.

But Vernor was not fully aware of these events. He had moved back into the library. Alice's last words to him still stung and he was spending less time getting stoned and more time working. He hardly ever went to Waxy's anymore, but kept in touch with the Angels through Mick Stones, who dropped in occasionally. Inspired by Vernor's industry, Mick even read part of *Geometry and Reality*, a book on curved space and the fourth dimen-

sion which Vernor pressed on him. But more and more, Vernor was alone with his ideas. He had finally worked his way out to the place where science shades into fiction.

He was getting deeply interested in determining the fundamental nature of matter. The conventional notion is that there is a sort of lower bound to the size of particles. You can break things down through the molecular, atomic, nuclear, and elementary particle levels, but eventually you reach a dead end, where you have some final smallest particles, called perhaps quarks.

There is a certain difficulty with this conventional view that there is such a thing as a smallest particle: What are *these* particles made of? That is, when someone asks what a rock is made of, you can answer, "a cloud of molecules"; and if someone asks what a molecule is made of, you can answer, "a cloud of atoms"; but if there is nothing smaller than quarks, what *is* a quark made of?

Vernor had been toying with the idea of the infinite divisibility of matter. A quark would be a cloud of even smaller things, called, say, darks ... and darks would be clouds of barks, and barks would be clouds of marks, and so on ad infinitum. In this situation, *there would be no matter* ... for any particle you pointed to would turn out, on closer examination, to be mostly empty space with a few smaller particles floating in it ... and each of these smaller particles would, again, be a flock of still smaller particles floating in empty space, and so on. According to Vernor, an object would simply be a cloud of clouds of clouds of clouds of ... nothing but pure

structure.

Vernor reasoned further that if there was no limit to how *small* objects could be, then perhaps there was no limit to how *large* they could be. This would mean that the hierarchy — planet, solar system, star cluster, galaxy, group of galaxies — should continue ever upwards, ramifying out into an infinite universe.

Vernor had studied enough Cantorian set theory to be comfortable with infinity in the abstract, but there was something definitely unsettling about a doubly infinite universe. Was there no way to avoid these infinities without baldly claiming that there is nothing smaller than *this*, and nothing larger than *that*? The solution came to him one night when he had the great vision of his life.

One evening after a good day's work, Vernor smoked a joint and, moved to do something new, went out into the garden behind the library. There was a large tree there, and he was able to climb to its fork, some five meters up, by clinging to the grooves in the tree's bark and inching upwards. Once he was up in the first fork it was easy to move up the fatter of the two branches to a comfortable perch some fifteen meters above the ground. He was barefoot and felt perfectly secure.

The reefer had, as usual, increased his depth perception, and his eyes feasted on the three-dimensionality of the branches' pattern. A fine rain was falling, so fine that it had not yet penetrated the tree's leaves. Set back from the City like this, in his leafy perch in the library garden, it possible to listen to the incoming honks, roars, and clanks as a single sound, the sound of

the City.

He noticed a hole in the branch some five feet above his head, and inched up, hugging the thick, smooth branch. It was a bee-hive in there — a wild musky odor came out of the hole along with a steady, highly articulated “Z.” A few bees walked around the lip of the hole, patrolling, but they were unalarmed by Vernor’s arrival. He felt sure that they could feel his good vibes.

A soft breeze blew the misty rain in on him, and he slid back down to the crotch he had been resting in. Closing his eyes, he began working on his head. There seem to be two ways in which to reach an experience of enlightenment — one can either expand one’s consciousness to include Everything, or annihilate it so as it experience Nothing.

Vernor tried to do both at once.

On the one hand, he moved towards Everything by letting his feeling of spatial immediacy expand from his head to include his whole body, then the tree branch and the bees, then the garden, the city and the night sky. He expanded his time awareness as well, to include the paths of the rain drops, his last few thoughts, his childhood, the tree’s growth, and the turning of the galaxy.

On the other hand, he was also moving towards Nothing by ceasing to identify himself with any one part of space at all. He contracted his time awareness towards Nothing by letting go of more and more of his individual thoughts and sensations, constantly diminishing his mental busyness.

The overall image he had of this activity was of two spheres, one expanding outwards towards infinity,

and the other contracting in towards zero. The large one grew by continually doubling its size, the smaller shrank by repeatedly halving its size ... and they seemed to be endlessly drawing apart. But with a sudden feeling of freedom and air Vernor had the conviction that the two spheres were on a direct collision course — that somehow the sphere expanding outwards and the sphere contracting inwards would meet and merge at some attainable point where Zero was Infinity, where Nothing was Everything.

It was then that Vernor discovered the idea of Circular Scale. The next few days were spent trying to find mathematical or physical models of his vision — for he wished to fix the flash in an abstract, communicable structure — and he seemed to be getting somewhere. Circular Scale!

Soon, however, it was time to go in for his weekly session with Phizwhiz. Vernor went with mixed feelings. On the one hand, with instant access to all of the scientific research ever done, and with the ability to combine and manipulate arbitrarily complex patterns, it might be possible for Vernor to develop his Circular Scale vision into a tangible physical hypothesis in a matter of minutes. On the other hand, the personal effect of plugging in again would be to stop him from working on his own for several days, and could quite possibly extinguish the recently kindled creative fire in him.

As it turned out, this problem never came up. When Vernor walked into the EM building he sensed that something was funny. Nobody seemed willing to look him in the eye. Nevertheless he went up to the machine/human interfacing room, and took a

capsule of ZZ-74 out of his pocket preparatory to plugging in. In an instant the room swarmed with loaches.

One of them snatched the pill out of Vernor's hand, and then cuffed the hand to his own. "Let's go, Mr. Maxwell," he said, pulling Vernor towards the door.

Another loach put his face near Vernor's. "We got you by the balls, super-brain. That stuff you're on happens to be illegal."

"The pill?" Vernor answered quickly. "That's just vitamins." If he just kept lying he could beat the rap. The loach had seized samples of ZZ-74 before, but they'd never been able to get any of it to show up in the lab analyses. The belief among the Angels was that ZZ-74 was so powerful that an individual dose was too minute to be chemically detectable. Unless the Us had radically improved their lab technique, he was safe.

But the loach seemed to have read his mind. "We're not interested in the dope anyway, Maxwell. You're wanted for conspiring to overthrow the government," Vernor started. Was he kidding? The loach continued, "It's gone far enough. We rounded up most of the others after the show last night."

"Show?" Vernor asked. "What happened?"

"Listen to him," one of the loaches exclaimed. "As if he didn't know." He turned to Vernor. "Only thing I can't understand, Maxwell, is how you could be stupid enough to come in here today."

The situation was more serious than he had imagined. Vernor decided to keep quiet until he found out what was up. There was a crowd of Dreamer

kids out in the street. Some of the girls had co-ax cables hanging from their sockets, and they held the cables out towards Vernor.

Every afternoon the fans gathered to see the Angels who had plugged in that day come out. It was hard to tell what they really wanted — action, good luck, ZZ-74, or just something to hope for. The existence of the Angels had done a great deal for the Dreamers' morale. Suddenly there was a real job which a Dreamer might aspire to, just as he was. It helped, of course, to have some scientific training by way of preparation for the high level of abstraction inside Phizwhiz, but some Angels, notably Mick Stones, knew very little science and got by on an innate ability to bend without breaking.

Today the kids were more excited than usual. The loaches drew their stun-sticks, but the kids surged closer and closer. Quickly Vernor pulled his free hand out of his pocket and threw his supply of ZZ-74 to one of the wilder looking kids. A loach punched Vernor in the temple as the kid took off down the street, swallowing pills as he ran.

When he recovered from the blow, Vernor found himself in the back of a robot-operated paddy wagon, gliding smoothly towards jail. He tried to figure it out. The Us needed the Angels. Or did they? Certainly the Angels had made life more interesting, and their assistance in helping Phizwhiz separate the information from the noise had led to a number of improvements in the Users' technology. But on the debit side, there was the increasingly sociopathic aspect of the changes the Angels had brought about

in Phizwhiz.

Vernor looked at the loach handcuffed to him. "Do you guys have some kind of grudge against the Angels? I mean, haven't things been getting better ever since we started working with Phizwhiz?"

"At the beginning it was all right," the guard answered. "But after last night —"

"Everyone keeps talking about last night. What happened? I've been out of touch."

"Are you kidding me?" the loach answered. "You didn't hear about it? That's bullshit. You helped plan it."

Vernor sighed. "Just tell me your version anyway."

"It was the Hollows. It was all fake last night. It started out with the news showing a picture of the Governor being shot. Then some guy who was supposed to be Andy Silver came on and said that Phizwhiz was our enemy and we should go out and start wrecking machines. Some nuts believed it and started trying to wreck the microwave towers. A lot of machines got smashed and a lot of people got hurt."

Vernor shook his head and sank back against the seat. He wished he had had a chance to take that pill — it would have made it so easy to float out of the police van, out of his body. It was getting dark and he saw several high-rise apartment buildings flash by. Everyone was watching the Hollows. You could look into each of the identical apartments, through the living-room and into the Hollownest; and in every apartment you saw the same Hollow scene, a policeman whipping a naked woman with a belt . . .

"Where are we going?" Vernor asked.

"We'll take you down to the station and book you," the guard answered. "You'll spend the night there, and tomorrow they'll probably ship you out to the prison. Over on the north side."

"What about a trial?"

The guard gave Vernor a funny look. "You'll get a trial."

Before he could ask any more questions they had pulled into the garage under the cop shop. The police van pulled into a stall and a garage door closed behind it. A loach was waiting for them. "Governor wants to see him," he said.

They rode the elevator up to the Governor's office on the top floor of the building. The office was not really as splendid as it should have been. Like everyone else, the Governor had cheap plastic furniture equipped with Hollowcasters to surround the tawdry reality with a sumptuous image. Unfortunately, the average hollowcaster gave an image which was about as true to life as a five-year-old color television set. Of course, it was possible to appreciate these images on their own terms — to admire the swirling flecks of static, the fuzzed edges, the slight hum, the drifting colors — just possible.

The Governor was there in person. Apparently he took great pleasure in being the one to give Vernor the bad news. "The Angels are through," he said through his smile. "Us no longer needs your YOUNIQUENESS."

"So who's going to give Phizwhiz soul?" Vernor asked.

"Moto-O is," the Governor responded. "He came to us with a request for the equipment and computer time to *build* a soul for Phizwhiz. Us thinks he knows what he's doing.

Right now, Moto-O is getting a nice trouble-free replacement for you all built."

The Governor looked at a list. "You're just about the last one, Maxwell. We got almost all the others when we raided Waxy's last night. Where were you anyway? Helping Stones and Silver screw up the Hollows?" He paused. "If you tell us where they're hiding, we might be able to give you special consideration..."

"I don't know what you're talking about," Vernor said. "Phizwhiz must have done the whole thing by himself."

The Governor laughed. "That's not what you all said when he started turning out fusion reactors. No, Phizwhiz can't do anything this exciting on his own. He needs help. But now we're going to have that nice mechanical soul Moto-O's building."

"Hold it," Vernor cried. "How do you know Moto-O's idea is going to work? It might take him years to get the bugs worked out."

The Governor shrugged. "He's got six months. We've got him locked up in the EM building lab. In six months he gets a plain cell like the rest of you." The Governor leaned towards Vernor. "I was going to wait till he was finished before jailing the Angels. Until last night we didn't really have much of a cause, you know. But you guys made it easy for us with your half-assed revolution." He leaned back. "We'll do fine without the Angels."

"Are you kidding?" Vernor protested. "The society's going to die with a dead machine running it. And it's going to stay dead. Godel's Incompleteness Theorem says that nobody,

not even Moto-O, is able to build a mechanical soul."

"Googols Unfinished Theorem? Sure, how long ago was that written? Moto-O's a sharp boy. Not a dope addict like the rest of you Angels. My money's on him. And if he's wrong..." The Governor seemed to feel a twinge of doubt, but then brushed it aside. "Don't worry about Us, Maxwell. Phizwhiz knows what's good for Us. Goodbye."

Two loaches grabbed Vernor by the upper arms and began marching him out. This was really happening. Desperate, Vernor shouted, "Governor, I've got a new idea. Circular scale! You can't lock me up. I can take us to the stars!"

"Who cares," the Governor answered without looking up.

6/Walk in, Mambo out

The loaches took Vernor downstairs to the cop shop. Suddenly no one seemed very interested in him. He was just another body to voiceprint and holograph. Before he knew it, he was alone in a cell. The other cells were mostly occupied by bums — drunks and junkies. Loud muzak was playing as a rudimentary form of mind control.

Vernor had often romantically thought of himself as a criminal, but this was his first time in jail. Initially he felt a sort of pride at this outward and visible sign of his differentness, but soon his mood switched to one of shame and anger. The other prisoners were noisy and the muzak and lights were left on all night. I don't really belong here, Vernor thought as he

struggled for sleep, I'm not like these people.

In the morning he was handcuffed and sent to the security prison in the northern part of the City. He was the only prisoner whose offense was serious enough to warrant this; and his relief at being away from the others' constant talk of matches and cigarettes soon turned to a terrible feeling of isolation.

The security prison was totally automated. The robot-operated paddy wagon drove in and a door closed and locked behind it. The van opened and Vernor exited to follow a Hollow of a guard through a series of automatically-operated doors. Soon he was in a small cell thirty floors above street level. It was with a feeling of great relief that Vernor discovered that he had a cell-mate, a middle-aged con-man.

"They're putting a goddamn Dreamer up here with me now," the man observed, noticing Vernor's socket. "Whadja do, kiddo, this floor's reserved for the hardened criminal types like yers truly." The man smiled and rummaged under his bed. "Got my picture in the paper, I did. Here." He handed a yellowing scrap of plastic to Vernor.

It was a clipping from USISU. Vernor had hardly ever seen the paper. When he read, it was science or philosophy, and when he wasn't reading he was usually around people that got all their information from the Hollows. A small picture of his cell-mate was captioned, "Bernard 'Boingy' Baxter," and the accompanying article was headlined "Hollow Con No Wallet."

"I had the sweetest number," Boingy reminisced. "I'd put on this

special suit that made me look like a Hollow. You know, it was kind of fuzzy and shiny and had little sparkles all over it. I'd get all cleaned up and then start beating on some Drone's door. Guy'd come out, usually drunk or strung out, 'Huh?' 'Greetings, Citizen!' I'd say, 'I'm a secret Hollow sent here with an important message for you from the President himself.' And the guy is, you know, looking around, and I'd say, 'Long distance Hollowcast from the Pentagon, friend, touch me if you don't believe it.' And I'd hold out my left hand, only, and this was the pisser, it wasn't my real left hand, it was a Hollow of my left hand. My real left hand'd be up my sleeve holding a little Hollow-caster." Boingy paused, and Vernor nodded.

"So the Drone feels the Hollow hand and it seems all right and then I ask him to show me some I.D. so I know it's really him. And he gets out his wallet ... and then I'd make my move."

"You mean you'd grab the wallet and run?" Vernor asked.

Boingy looked shocked, "I'm a *con-man*, not a mugger. No, I'd just look real nasty all of a sudden and say, 'Let's have the money, Citizen.'"

"And they'd give it to you?"

"Man, I was from the *government*. By the time they stopped to wonder how a hollow was able to actually *touch* the money and put it in his pocket I'd be gone. Boing." He burst into laughter, almost certainly genuine, though he kept a sharp eye on Vernor's reaction. Vernor laughed.

"I'll probably win my fucking trial," Boingy continued, wiping his eyes. "I mean I didn't threaten them

or promise them anything. Just 'Let's have the money.'” He sighed and shook his head, “People are funny.” He stopped and looked out the window, struck once again by the unfunny-ness of his present situation.

“Well,” Vernor said finally, “I was an Angel, but now I’m busted. I guess this is part of the trip.”

The jail was automated in order to avoid any problems with bribed or kidnapped guards. The blank cell door never opened. Food came out of a spigot over the toilet, just like back in Dreamtown. In Dreamtown the stuff that came out three times a day had been different colors, but in the prison it was always gray. A gray paste — slightly salty, slightly sweet, a little starch, a little meat. “Sort of looks like shit, oozin’ out by the toilet like that,” Boingy observed three times a day, until Vernor started beating up on him.

But things reached a balance between them, and Vernor settled in, though it took a few weeks. He began to wonder if he wasn’t better off without all the dope ... when he wasn’t wondering how to get some. One seedweed seed was all it would take. God knows he had enough piss to grow it in. But he didn’t have that one seed, so he returned to his work.

Vernor had told the Governor that he could get them to the stars. How? It was, to say the least, a little hazy. He began keeping a journal of his fragmented ideas and his daily attempts to piece them together into an answer.

Weeks turned into months. Vernor and Boingy had no contact with the outside world. Occasionally a Hollow of a guard would appear in their cell and give them instructions. Once a

Hollow lawyer came to see Vernor, but all he did was deliver a canned speech about how important Vernor’s case was to him. Generally, Boingy explained, once you went into the security prison you could expect to go to court after several years, with a good chance of dismissal or suspended sentence at that time.

“I been in here three years,” Boingy said, “and the only other person I’ve seen was the guy before you. They took him out one day and he never came back.”

“How did they take him out, when there’s nobody here but prisoners?” Vernor asked.

“The door just swung open, and a Hollow asked him to come on.”

“Why didn’t you go with him?”

“The Hollow told me not to,” Boingy answered, looking embarrassed. “I shoulda, you’re right, but it was the Governor himself. I was scared. They would’ve seen me.”

Vernor determined that when Boingy’s trial came he, Vernor, was leaving with him. Hollows couldn’t see, they were just moving pictures. Still, there was bound to be a check-point somewhere....

The next week a Hollow of the Governor appeared and the door swung open. The Governor’s Hollow gave instructions.

“Please come with me, Citizen (zzzt),” — pause while a special tape loop came on — “Bernard Baxter (zzzt).” The standard spiel came back on: “All other prisoners remain in the cell.”

Quickly Vernor slipped across the cell and fitted himself inside the Governor’s Hollow. A holographic image is an interference pattern formed by

two low-intensity electromagnetic fields. The effect is similar to the standing waves that appear in rivers' mouths when the tide is running hard. There was no real danger in standing inside a Hollow, since the two fields filled the surrounding area anyway; it was just that in the region of the image they were almost in phase with each other.

Standing inside the Governor's Hollow was like being inside a glowing cloud. Now if Vernor could just match his movements to those of the Governor's Hollow, he could walk out undetected, at least until they switched the Hollow off, but it stood to reason they'd leave it on until it had escorted Boingy to the courtroom.

The months of clean living paid off. Vernor's synchronization was such that it felt more like the Hollow was moving with him, than vice-versa.

They went out of the cell and down the hall to an elevator. The whole time the Governor was talking — about democracy, fair trials, repentance and the new life, and public safety. "You will notice," the Hollow boomed as the elevator door closed behind them, "that there is a grate in the wall here. This elevator is also our gas chamber, for those clients whose lawyers waive trial. It is fortunate Citizen (zzzt) Bernard Baxter (zzzt) that your cell-mate did not accompany you. Trial is waived in such cases." The Governor and Vernor nodded to a wide-angle camera lens mounted in the wall.

"Oh, no sir," Boingy said, mopping his brow. "He wouldn't do a crazy thing like that."

The elevator door opened to reveal a courtroom. The Hollow lawyer was there, and sitting on the bench was a

Hollow of the Governor. Funny they'd have *two* Hollows of him at the same time, Vernor thought ... but they didn't. He was no longer concealed.

"It was his idea, your honor," Boingy shouted. "I didn't know he was inside you." But the Hollow on the bench was already spilling out its taped speech. There was no camera in the courtroom.

"Citizen (zzzt) Bernard Baxter (zzzt) you have been sentenced to three years' confinement. It is only fitting that you should gladly make this reparation to Us, whose social fabric you have so grievously soiled. But Us is merciful as well as just; the sentence is suspended provided you sign this release form."

A piece of paper appeared on the Governor's bench. Boingy signed with a shaking hand. The Hollows disappeared, and a door to the street slid open. Trying not to run, Boingy and Vernor exited and started down the street.

"I don't get it," Vernor said. "Why did they let you off?"

"I already *been* here three years, Vernor. When you go in they decide how long to keep you, and when the time's over they give you the trial with a suspended sentence. This way there's no hassles with appeals and real lawyers. I don't think there *are* any real lawyers anymore, even."

"How long would they have kept me, do you think?"

"You would have found out at your trial." Boingy walked a few more steps in silence. "You better hope it was for a long time, because when it's time for your trial they're going to notice that you left early."

"Unless they notice sooner," Vernor added, glancing back towards the prison.

"Right," Boingy said shortly. "Right. And so, old pal, I bid you farewell. Good luck, and forget my name until you strike it rich." They shook hands and Boingy Baxter went off down a side street, bounding on the balls of his feet.

"See you in paradise," Vernor shouted, and headed for the walktube entrance.

7/In Mick's Hands

Forty minutes later Vernor was in front of Waxy's. It was the first place the Loach would look for him, but he couldn't think of anyplace else to go. In any case, it would probably be at least a day before they noticed that he had escaped.

He opened the door cautiously, but the place was just about empty. There was some odd music playing on the Hollowjuke, a recording so old that there was no visual track at all. It sounded like Frank Zappa. Vernor looked around. There was only one person who listened to music like that.

Mick Stones was sitting at the bar, his hands cupped around a shot glass of synthesmack. Vernor walked up and greeted him effusively, but Stones seemed to be on the nod. His eyes were closed and he was rocking back and forth to the music. Vernor ordered a beer and a reefer. The place was so empty that Waxy himself was tending bar.

"Big bust?" Vernor inquired.

Waxy shook his head sadly. "They came in and got 'em all. Except for

him." He rolled his eyes in Stones' direction. "And he might as well be gone. Spends every day junked out of his mind and listening to the Zap." Vernor recalled now that Mick had somehow talked Waxy into playing records from his fifty-three album Frank Zappa collection afternoons. This seemed to be the only remaining tradition from the days of the Angels.

Waxy set the beer down in front of Vernor and handed him his reefer. His face brightened with a sudden hope. "Are *all* the boys getting out today?"

"No, no. I snuck out." Vernor lit his stick of weed and inhaled deeply. This was going to feel good. "How about Stones. How did *he* keep from getting busted? Haven't they come in here looking for him?"

"They did for awhile. They really wanted him, came in every day. But he has this trick. Look." Waxy pointed to Mick's shot glass.

The glass appeared strangely distorted, now shrunken, now swollen, warped in impossible curves which shifted with the slow twitching of Stones' skinny hands. Vernor looked at his joint, then at Waxy. Waxy shrugged. "He can do it to himself."

Do what? This was getting to mysterious. Vernor shook Mick's shoulder. "Hey, Mick! Come on, man. It's *Vernor*. I'm out of jail and we've fucking got to *do* something!" Still no response. Stones' lips were moving slowly, but only to the sounds of the record.

Vernor looked helplessly at Waxy, but the proprietor's sallow face was bent into a rare smile. "Spike him," he said, handing Vernor a loaded syringe, "on the house."

Vernor recalled the evening after he

broke up with Alice. Stones had it coming to him. He plunged the needle into Mick's leg. As Vernor watched, his friend's nodding became less fluid, more stroboscopic. His eyelids snapped up like window shades, and his eyes began to focus —

"Loaches coming! Get down!" It was Waxy, who had stationed himself near the window. A blast of adrenalin pulsed in Vernor's skull, but before he could run he had realized that this was part of Waxy's practical joke. He turned to tell Mick not to worry, but his friend had disappeared.

"Where'd he go?" Vernor asked, feeling unpleasantly confused.

Waxy was actually grinning. "He's right there. In his chair."

Vernor leaned over and looked. There were Stones' ectomorphic hands, all right. The hands were cupped together as if in prayer. Fine. But the rest of Mick Stones was nowhere to be seen.

"That's how he hides," Waxy explained happily. "He gets inside his hands."

Vernor felt like crying. It was weird enough just being out of prison after seven months, but... "Come on you guys," he pleaded. "Give me a break."

Waxy gave a sharp whistle, and the hands on Mick's chair parted, clamlike, to reveal a homunculus, a tiny, distorted Mick Stones. It seemed to be talking, but the voice was so high and quick — and the whole scene so unpleasant — that Vernor's brain couldn't pick out the words. As he watched, the hands seemed to massage the space between them and the tiny figure began to grow.

In a few seconds a very wired Mick

Stones was squatting on the bar stool next to Vernor, with one hand beneath the feet and the other on the top of the head. Vernor dragged on his reefer, but it had gone out. On second thought, that seemed like a fortunate thing.

"Vernor Max. I was waiting for someone to break out." As he spoke, Mick was glancing around. In seconds he had made himself comfortable in the new situation. He removed the syringe from his leg — where Vernor, in his excitement, had left it — and he threw it at Waxy.

"Professor K. laid this on me," Mick said to Vernor, holding up his hands. There was a small disc of foil glued to the center of each palm. Wires ran up his arm and under his shirt from the discs. Apparently they were connected to some type of power unit which he wore under his coat. "Probably coulda used this to get some of you guys out, but then I figured anyone who deserved to be out'd make it on his own."

"What is it?" Vernor asked.

"VFG," Mick said, suddenly cupping his hands around Vernor's head. The room around Vernor seemed to be growing, everything seemed to be growing. His shoulders seemed to stretch out for a yard on each side. "Now your head's shrunk," Mick explained.

"Stop," Vernor gasped, though he felt no actual physical discomfort. "Turn it off."

Mick took his hands away and things snapped back to normal. "This is a portable model of Professor Kurtowski's Virtual Field Generator. VFG. You're the one who spent five years in the library. You must know

what it is."

Vernor was incredulous. "The Virtual Field? Sure, his last paper was all about it. But I never thought he could build something that would actually generate it!"

"Yeah," Mick answered, lighting a reefer and passing it to Vernor. "Well, that's what he's been doing most of these last twenty years. Only now that he's got it, he doesn't know what to do with it. He wanted me to talk to Oily Al about it, so he gave me this portable model. Only Al got busted with the rest of them same day I got this thing."

Vernor didn't answer immediately. Something was nibbling at this mind. Circular Scale ... could he test it with the VFG? Mick was still talking. The hit of crystal had certainly done its work. "So when the loach came busting in I decided to use this on myself. Actually I was going to blow myself up big and scare them, but I turned the dial wrong. Worked good, though. I must of hid from them twenty times the way you just saw."

"Isn't it bad for you?" Vernor interrupted. "I mean getting squashed up like that?"

"You saw how it felt when I shrank your head," Stones replied.

"It didn't feel like anything," Vernor admitted. "Really, it felt more like everything else was growing than that my head was shrinking. Relativity."

Stones nodded. "Right. Just now the space inside my hands looked like a little bed to me. Outside you think there's not much space inside my hands, but the VFG stretches the space so there's all the room I need."

"Negatively curved space," Vernor

mused.

"Right on," Mick answered. "*Geometry and Reality* by Dr. Pig Tire."

"That's the book I got you to read."

"Sure. That's how I knew this field wouldn't hurt me. It's just like I was a man painted on a sheet of rubber. You can fit the man into a tiny circle painted on the sheet if you just stretch the rubber inside the circle. Or shrink the rubber inside the man."

Vernor was beginning to remember more of Kurtowski's paper on the Virtual Field, "The Geometrodynamics of the Degenerate Tensor." The idea behind the Virtual Field was that it introduced a localized rescaling of the space and time coordinates, but the apparent forces could be renormalized away at any point — which was to say that the field could shrink, expand or bend you without hurting. You shrank, but not by being crushed — all your atoms shrank at the same time, and none of your internal structure was strained or disturbed.

"The Geometrodynamics of the Degenerate Tensor" had ended with some fairly specific suggestions for the experimental investigation of the principles expounded, but by the time the paper came out, laboratory science had been banned in the Us. The dangers of uncontrolled scientific investigation had been deemed too great, and those who insisted on obtaining physical data were requested to send their experiment specifications to Phizwhiz, who would simulate the experiment and produce a set of data. The data Phizwhiz produced were obtained by straight calculation with a touch of randomization; no actual physical measurements were made at

all. The experimental data obtained in this way tended to conform rather nicely to one's expectations. Unfortunately, these were of no scientific value.

Determined to get a real test of his theory, Kurtowski had dropped underground, and was said to have constructed a large laboratory for himself somewhere in the Eastside. Andy Silver and Mick Stones were the only Angels who had met him, and Vernor gathered from their elliptical comments that the years of dedicated work had turned Kurtowski into something more than a guru.

"Mick," Vernor said, "You've got to take me to the lab." The VFG was what he needed to test his theory. "I had this idea in jail. Just before jail, actually. I call it Circular Scale. If we could get a big Virtual Field Generator I think we might be able to do something really amazing." His head swarmed with ideas.

"Just make sure it's *really* bizarre," Stones cautioned. "The Professor kept telling me that he didn't want his invention to be used as a tool of fascist oppression or beer-fart consumerism. Like, he didn't spend twenty years getting it together just to shrink turbines for shipping, or enlarge some lame dude's ass for his hemorrhoid examination. He was counting on Oily Al to do something really dangerous with it. Like he says, *Freedom is Danger*."

"Did he already know that it's safe to use it on people?" Vernor asked.

"On paper. He wasn't going to turn it on himself until someone else tried it, though. Freedom is also staying alive, y'know. For him anyway. I figure the reason he gave *me* the VFG was that if anyone was going to turn it

on himself it'd be me." The shot was wearing off and Mick was beginning to look less alert. "I was gonna go tell him about it, but I've been in a bag. Just couldn't get out of it, you know, waiting for something to turn up."

"Here I am," Vernor said.

Mick patted him on the shoulder, "It's good to see you." His speech was beginning to slur. "Hey, Waxy, gimme another bang before I fade out."

Another injection and Stones was ready for a civilized evening. "I heard Moto-O was supposed to build Phizwhiz a soul to replace the Angels," he said. "Is it true?"

"Yeah," Vernor answered. "He was telling me about his idea a couple of weeks before the big bust. I don't think it worked, though. It's not crazy enough. There *might* be a way —"

"Well, where *is* that pimp?" Stones interrupted. "It's thanks to him that the Angels are gone."

"He didn't know that was going to happen. Anyway, he's probably in jail by now. He had until last month to finish the job ... There hasn't been any big talk about a new Phizwhiz, has there?"

Stones was feeling around in his pocket. "No, I don't think so. Look, as long as we're going to go to Kurtowski's lab tomorrow morning, we might as well use up what's left of the ZZ-74. It's Kurtowski that makes the stuff, you know."

They split seven of the clear gelatin capsules — a hefty dose; although it proved not to be that easy to sort the ZZ-74's effect out from the rest of the evening's excitement.

The high point came when they played Zappa's classic cut, "Stink-

foot," with the VFG turned up to full warp. The room around them wagged and twisted like a melting plastic shoe-box, but in full synchronization with the steady beat of the song.

The bent notes rippled in new but inevitable chord progressions, and Zappa's happy voice talked and sang, over and over, as Waxy kept replaying the song for them. It was the first time Vernor had felt alive in months.

8/Trips

Vernor slept upstairs at Waxy's. The room was equipped with a pornographic Hollowcaster. It was nice having a beautiful naked girl posing herself for him, right on his bed, but it would have been a lot nicer if she had been somewhat less ethereal. He was stoned enough to attempt mounting her, and he just about broke his cock with his first mighty thrust through her and into his mattress. His last thought was that he should have called Alice and tried to patch things up.

The next morning he showered, dressed, and went downstairs for breakfast. "What's the menu today, Waxy?"

"Green. How do you want it?"

"With a glass of beer." Waxy filled a bowl with lumpy green paste from the wall-tap, and drew a glass of beer at the bar. Green was Vernor's favorite color Dreamfood. They called it Dreamfood because all the Dreamers ate it. It came free for anyone in Dreamtown. A different color-coded flavor for every meal. Green *tasted* like scrambled eggs with bits of toast and bacon. If you were going to eat it,

you didn't ask what it was.

"Whatever happened to Mick last night?" Vernor asked between mouthfuls.

Waxy jerked his head towards the closest booth. "He took a hit of three-way and went in there to ride it out."

Vernor finished his breakfast and went over to the booth. Three-way was a particularly vicious combination of a stimulant, a depressant, and a hallucinogen. But Vernor was not prepared for the sight which greeted him when he opened the door of Stones' booth.

Mick's torso was bloated to twice its normal size. His arms and legs were twisted at hideous, unnatural angles, and half of his head seemed to have withered.

Vernor watched with mounting horror as the torso began to quiver, jelly-like, and the ruined head turned slowly toward him, the normal half slowly shrinking to match the other half. Unbelievably the apple-like head spoke: "You look really fucked, Vernor." Of course! It was the VFG.

Vernor exhaled. "Please turn that thing off, Mick." A click, and Stones zipped back to his usual shape.

"Never felt a thing," he remarked. "I just felt normal. It was everything else looked funny." Relativity: halve your size or double the size of everything except you ... no difference. The Virtual Field was safe because it distorted space without inducing any curvature of the time axis. No time curvature meant no forces — just a nice safe rescaling of the size scales.

Stones breakfasted on a handful of leapers and they set off for the East-side. The City was some twenty kilometers in diameter, but there was a rapid underground transportation

system of moving sidewalks in the walktubes.

They took the stairs down to the Eastbound tube. There was a thirty meter river of people flowing past, borne along by the small spinning rollers which made up the surface of the moving sidewalk. The people near the edges were moving no faster than a walk, so that it was possible to step on and off the moving sidewalk without difficulty. As you moved towards the center of the tube, however, the speed of the rollers gradually increased until you were doing about forty kilometers per hour. Each roller was quite small, so the ride was smooth.

Kurtowski's laboratory was in the basement of a plastics factory, not far from the walktube exit which Mick and Vernor used. After Mick had pounded on the door and hollered for awhile, the door opened.

The Professor greeted them warmly. "You have good news?" he smiled. Mick shrank Vernor's head and then let it snap back to normal. "As I thought," Kurtowski observed, "a singularity-free diffeomorphism never hurt anyone." He turned to Vernor, "And you, pinhead, who are you?"

"Vernor Maxwell."

"Ah, ja, poor Andy talked about you once. You have studied my early work, I think?"

Vernor nodded. "Mick was showing me that VFG. I sort of had a good idea for something to do with it." He felt nervous about telling his "good ideas" to so great a thinker.

"Let me show you around the lab, and then we'll talk."

Apparently the basement was no longer used by the automated factory above them. It was a huge room, with

machines and workbenches scattered all around it; books everywhere, usually open to some valued passage; mounds of notes; used foodtubes and dirty clothes; and crates and crates of supplies for Professor Kurtowski and his machines.

An area near the far wall was apparently the present nucleus. The density of books and supply crates increased as one approached it, and many cables led there. Indeed, this area was where Kurtowski was building his new large-size Virtual Field Generator.

"Ja," he said as they approached the main work area, "you are walking through my life here. This," he slapped a loaded workbench affectionately, "is where I tamed my little neutrinos. Over here," a panel of dials loomed over them, "was my listening machine." He stopped. "Listen, Vernor."

He handed Vernor a pair of earphones and began adjusting controls on the panel. A rapid, articulated sound seemed to come from the earphones. Vernor put them on.

There it was before him. But what was it? Laughable to force its magnificence into human words, human concepts ... only float closer, closer, ahhhhh. Warmth and light enveloped him, and his body outline began to dissolve. He was a cloud. There was clear ether in between his particles ... the particles were thoughts, and the space between his thoughts was black was white ... no space, no thoughts, inside, outside-CLICK.

Someone had turned the phones off. The energy field in front of Vernor's eyes arranged itself into the basement of a plastics factory, into Mick Stones' face. Kurtowski explained, "That's

the center of the galaxy, Vernor. The treble is the neutrino flux and the bass is the gravity waves. Pulsars and singularities on miscellaneous percussion." He smiled. "When I use it I generally set a timer to turn it off—"

"Put me down for a half hour," Mick said, taking the earphones. He tapped his head. "I'm down to summer reruns in here." The Professor tuned the machine in again and Stones sat down with a happy expression, his eyes open but not looking.

"I get a lot of good ideas listening to that," Kurtowski continued. "The problem is remembering them, eh?" He led Vernor on through the lab. "Controlling the virtual electron field's interaction with the neutrino flux was all I had to do to get my machine going. It was not so very hard once I realized that neutrinos don't exist."

"How do you mean?" Vernor asked.

"It's like the coast. There is a coast because there is land and ocean. Neutrinos are the coast between the regular particles and the tachyons. There is no *thing* you can point to and say, this is part of the coast. When you point, it is at land or at water. The neutrino flux is just ... the erosion of regular particles by tachyons."

"Tachyons? The particles that go faster than light? I thought that since they were theoretically undetectable they didn't exist."

"Exist for whom, Vernor?"

Vernor didn't attempt an answer. They had left Mick Stones with the earphones and were now in the main work area. There were several lights, littered workbenches, and two roughly conical assemblages, similar in ap-

pearance and separated by about ten feet. Large wave guides led to the cones; apparently they were powered by radiation from the hulking transformer behind the workbench, which in turn received its power through thick bus bars leading up through the ceiling into the humming factory above.

Professor Kurtowski placed a chair in the space between the two parts of the Virtual Field Generator. On the chair he put a large clock with a second hand. "Watch closely," he said, turning on the machine.

The power switch was a dial. As the intensity of the field was turned up the chair began to be affected. The top of the chair's back was approximately level with the poles on the top of the VFG cones. The effects were strongest there. In a few seconds the back of the chair had shrunk to the size of a ping-pong paddle. The shrinking effect was weaker down by the chair's legs, so the whole chair seemed to taper towards its top. The floor under the legs bulged upwards, drawn by the shrinkage of space, and the VFG cones seemed to lean slightly towards the chair.

Kurtowski upped the power. Now the floor was bulged by a couple of meters, holding up a tiny chair which seemed to taper to a point. The cones were definitely leaning over.

Another power boost and the chair was all but invisible between the almost touching points of the severely distorted cones. "Now the other way," the Professor said, dialing back down to zero power. "Did you notice the clock?"

"Was it going faster?" Vernor asked. "It seemed like the smaller it got, the faster it went."

"Right, Vernor, conservation of perceived momentum, eh?" The Professor switched the polarity of the machine and began turning the power up again. Now the back of the chair was growing, the legs as well, but less drastically. The chair began to resemble a spike balanced on a depression in the floor. The cones leaned away, as if to make room, as the chair grew to some six meters in size.

Somehow the space between the VFG cones seemed to be taking up most of the basement, and the enormous chair was almost overhead. The second hand of the clock on the chair was crawling, its motion barely perceptible.

The change in time-scale surprised Vernor, but it was, after all, to be expected. Big things are always slower than little things — watch an elephant and a dog scratching themselves. Less metaphorically, when you shrink a watch, it's going to go faster if no angular momentum is to be lost. Professor Kurtowski turned the machine off.

"So what is it good for, Vernor? You have, I think, a project?"

Vernor collected his thoughts. "How small can you make something with the Virtual Field?"

"There is no obvious limit. At first I was afraid that a great enough shrinkage might initiate gravitational collapse to singularity, *but*, as the local densities of the objects in the field do not actually change, this problem does not arise." The Professor was in good form.

"So you think you could shrink forever?" Vernor asked.

"This is not entirely clear. It may be that some unknown effect sets a limit to how small something can become.

But tell me what you have in mind."

This was it. The idea Vernor had been nursing ever since his vision in the tree came tumbling out. "Professor, I think that if you shrink something enough it gets as big as a galaxy. I think that just as going West long enough ends with coming back from the East, shrinking far enough below normal size ends with coming back from larger than normal size." Kurtowski looked interested and Vernor continued.

"The size scale extends out in both directions. Going down we have humans, cells, molecules, atoms, elementary particles, and so on. Going up we have humans, societies, planets, solar systems, star clusters, galaxies, groups of galaxies, etcetera. My idea is that maybe this size line is actually a huge circle. That is, maybe if you go three steps below electrons and three steps above clusters of galaxies you get the same thing. Usually the largest thing of all is called Universe, and Leibniz has called the smallest thing of all Monad. I suggest that Universe equals Monad. So if you break anything down far enough you will find the whole Universe inside each of its particles." Vernor stopped and drew a breath.

"This is a *very* strange idea," Professor Kurtowski said, lighting a cigarette. "A *bizarre* idea. In this world of Circular Scale you have no matter; this is nice, yes?"

Vernor grinned. "The problem of matter is answered by the Circular Scale theory. You take a rock and grind it into dust, grind the dust into atoms, smash the atoms into electrons and nucleons, break these into quarks and resonances, do it five more times

and notice that what you're looking at is galaxies ... which split into stars and planets, and the planets split into rocks ... one of which is *the same rock you started with*. And you can go around again without ever encountering any solid matter — just form and structure."

"Ja, ja, very nice," Kurtowski smiled. "And you want to make the trip around the Circular Scale with my Virtual Field Generator, eh, Vernor?"

Vernor gulped. "Actually, I was thinking more in terms of sending a piece of apparatus around."

"If I can risk my beautiful machine, you can risk your neck, Mr. Maxwell. After all, Mick has determined that the field is not harmful. It should be relatively safe for you to make this trip." Kurtowski paused a moment. "But there are difficulties. There will be some serious difficulties."

Mick Stones, back from the galactic center, had been listening to the last part of their conversation. He grinned and slapped Vernor on the back. "The incredible shrinking man," he said.

9/ZZ-74

"Did you ever plug in with a girl, Mick?" Vernor asked Stones. They were dragging a heavy crate of synthequartz across Professor Kurtowski's laboratory floor. They had been living there for two weeks, helping to beef up and outfit the VFG for a trip through the place where zero equals infinity. Vernor couldn't decide if he wanted the machine to be ready for him or not.

"Sure," Stones drawled, "plenty of times. You get a piece of co-ax and run

it from your socket to her socket and then you do it."

"Yeah, yeah," Vernor interrupted, "I know. But what's it *feel* like?"

"You *never* done that?" Stones asked in amazement.

"No, well, you know. I just never did. And now I may never get a chance."

Mick laughed and shook his head. "If you get into it it's kind of hard to get sorted out after you come. One time I wanted to say something afterwards and it came out of her mouth. The words." He grunted with effort as they rocked the box over a thick cable in its path. "Once I met a chick who had a dual amplifier. You both plugged into the amp and it mixed the signals and sent 'em back triple intensity. Actually there was four of us plugged into the amp. It had these long coil-spring co-axes. You get so hypnotized — I can't describe the scene."

Kurtowski looked up as they approached him. "Tomorrow is the day, boys." Indeed, the machine looked ready. They had constructed a tensegrity sphere of molybdenum tubing and jyxon cables. The two VFG cones had been rebuilt and attached to the inside of the sphere at its North and South poles, with the cone points almost touching at the sphere's center. There was a band of power units along the equator of the sphere, with a space left for a seat and a control panel. All that remained was to encase the sphere in a film of the strong, transparent synthequartz and it would be a functioning scale-ship.

The idea was that the virtual field would fill the sphere, causing the whole thing to shrink — sphere, VFG

cones, passenger and all. The passenger, Vernor in this case, would be able to control the rate and the direction of the size change.

They set to work putting the coating of synthequartz on the framework of molybdenum and jyxon. The sphere was constructed to have a certain natural elasticity so that it would not crack under possible irregular pressures. The purpose of sealing Vernor off from the space around him was so that he could continue to breathe when the sphere and its contents had shrunk to a size smaller than an oxygen molecule. Without the containing skin of synthequartz, the air which shrank along with Vernor might drift out of the field and expand to a non-usable size — after all, you couldn't breathe basketballs.

The Professor was in a talkative mood. "I'm very proud of you, Vernor," he said. "This is the kind of thing I wanted to use my VFG for — not miniaturizing factories or shrinking doctors to clean out rich Users' livers. Daring scientific research by a fellow initiate, *this* is worthy of my machine. And if you never return, if you never return, Mick and I will tell the world of your bold attempt to travel around Circular Scale."

"At's right, man, you're right on," chimed in Stones.

"How long do you think it will take for me to complete the trip?" Vernor asked, hoping to change the subject.

"This is an extremely difficult question. We have the problem that we do not know how many scale levels there are. We do not know if you will move from one level to the next at a uniform rate. And, last, we have the difficulty that your time will run faster than ours

when you are very small, and slower than ours when you, it is hoped, become very big. So I cannot tell you. Maybe ten minutes, maybe ten days, maybe ten billion years."

"Ten billion years," Vernor echoed. "Well. Look, if it feels like I'm not getting anywhere, I can always reverse the polarity and just expand back the way I came, can't I?"

"This can be done," Kurtowski agreed. "But you should not do it prematurely. Such a reversal, if carried out abruptly, could well produce a radiation field of a perhaps too great intensity."

"Perhaps too great," Vernor murmured. They were just about through stretching on the synthequartz. Tomorrow was the day. Maybe he should sneak out during the night. He was ashamed to have such a thought about the greatest adventure in history. But maybe? One thing, though: the loach was probably looking for him by now. The prison monitor must have noticed that there was no life in his old cell. They had probably sent up a robot doctor and found Vernor missing. How hard would they look for him? Pretty hard, he guessed. They would be looking for him in many ways — simple surveillance by cameras and detectives; theoretical modelling of his projected behavior by Phizwhiz; and, most insidious of all, careful analysis of the data from the Dreamers' sleeping brains. If enough of them knew where he was, it would show up.

"Mick, did you tell anyone that we were coming out to the lab?"

"I don't know, man, that was weeks ago." Mick lit a stick of seaweed. The machine was finished. "Look at that thing. You're really lucky to be the

one in it tomorrow, Vernor." Stones laughed with just the faintest hint of a jeer. "Seriously, if you don't make it back, I'll get the Professor to send me after you." He passed the reefer to Kurtowski.

"I was just worrying about the police coming after me, was all," Vernor said. "Cause if they're not I got a good mind to leave while you guys are sleeping tonight." They didn't answer and Vernor thought about it some more. It seemed certain that the loach would be after him. "Let's test the fucking thing a *little* bit at least." He drummed on the hull nervously. "Give me that reefer, Prof, I thought you didn't smoke anymore, anyway."

Kurtowski exhaled a lungful and handed the stick to Vernor, with a chuckle. "Smoke, no smoke, what's the difference. We exist. Once you're born the worst has already happened to you. You've been so worried about dying, but have you thought about what you'll do if your trip is successful?"

"I don't know. Smash the government, I guess. Like that's the thing to do, isn't it?"

The others nodded. Sure. Smash the government. "That's what Andy wanted," Kurtowski said.

"Yeah," Mick put in. "Remember? He said, 'Just tell them I was a martyr for the Revolution.' You think he's still alive inside Phizwhiz?"

Nobody knew. They smoked in silence for a few minutes. Finally the Professor spoke up. "Did I ever tell you the way I discovered ZZ-74?" he said, turning to Mick.

"I been *waiting* for you to bring it up. You got any?" Stones was lolling

against a panel of instruments, looking through the remaining drugs in his pockets. "I haven't had any in six months," he lied.

"Do I have any? Ja, that's the question. Do you know what it looks like?" Kurtowski asked Vernor. This was good seaweed. The air seemed to be made of a transparent substance more rigid and more clear than air. ZZ-74?

"Well, the stuff we were taking was usually a clear gelatin capsule. It was like there was either some gas or a very small pinch of powder inside."

Kurtowski smiled and shook his head. "No gas, no powder. Didn't you take it on the street once?"

"Yeah," Vernor said, remembering, "sure. My first time. Andy gave it to me. It was a little white pill like an aspirin."

"Perhaps it *said* aspirin on it, no?" Kurtowski's smile broadened. What was he getting at? He continued the dialogue: "Why doesn't everyone take ZZ-74?"

"Because the Us can't get the formula to legalize it and go into production," Mick said. "God knows they'd like to."

Professor Kurtowski held out a closed hand and opened it. "This is ZZ-74." The hand was empty. As the truth hit him, Vernor felt the room around him recede. They were sitting in the light of a single lamp, magicians three, null and void. The wind of Eternity swept through him.

Mick reached out and took a pinch of air from the Professor's hand and snorted it. "A righteous hit, old man," he said, stretching out on his back.

Vernor popped a pinch of the air

into his mouth. "The perfect drug cannot exist, lest it be dragged through the dirt by the infidel?" he questioned.

Kurtowski nodded. "Ja, I had this idea after watching what happened to LSD. You had squares taking it to improve their sex-life, even ad-men eating it for inspiration to sell cars — it was too accessible. These people would take it, but they would not see the sublime mystery, the white light, the All in Nothing ... and then they would say that I lied when I said that LSD had showed these things to me. I began to doubt, and acid no longer worked for me. I went into the laboratory to create a better drug — I was a materialistic fool like the others. But one day, deeply absorbed in a synthesis, I dropped a beaker on the floor. As it shattered, so did my delusions and I saw the All in Nothing again. I was there and I had never left. To remember this moment I name it ... ZZ-74. Later Andy had the idea of giving it to the people. Since there was nothing there, they could not destroy it."

Professor Kurtowski's voice seemed to come from somewhere inside Vernor's head. Immortality and freedom were man's birthright. ZZ-74. He lay down to enjoy the trip.

A shaft of sunlight slanting in through one of the laboratory's street-level windows woke Vernor. The other two were asleep on the floor near him, and the transparent globe of the scale-ship loomed over him. He was still high ... on what? He smiled as he realized, saying the word softly to himself, "Nothing." Had Kurtowski been putting them on? ZZ-74. Last night they had taken it in its purest form. He was

still high.

Mick Stones was rubbing his large mouth. He sat up and looked at Vernor. There was nothing to say. They sat watching flecks of dust float in the shaft of sunlight, then got some food out of one of the crates near the door. When they came back to the scale-ship, Kurtowski had vanished.

"Let's do a test before I get in, Mick."

"O.K."

They rigged a timer switch to the control board to send the scale-ship down for three minutes, local time, and then back up to normal size. Professor Kurtowski appeared from behind a mound of electronic components and watched silently, finally saying, "Ja, ja, a little test is all right." He seemed no more eager to talk than they. Everything was posed in such beautiful clarity that they hesitated to muddy the vibe with opinions, desires, facts and figures.

Vernor clicked on the timer switch. The VFG cones began to hum. The field would build up to appreciable strength in about sixty seconds.

Suddenly there were feet pounding down the stairs to the basement laboratory. At the other end of the huge room a door was blasted open. It was the loach. The leader was yelling, "We see you, Maxwell! Don't make a move! You too, Kurtowski!"

Back to prison? Never to find out if Circular Scale worked? Isolation from his fellows? There was no decision to make. Vernor scrambled into the scale-ship as the hum of the VFG cones turned to a whine. The Professor was speaking rapidly to Mick Stones, who then started towards the scale-ship as well.

The field was building up and already the objects in the laboratory seemed to be growing. Mick looked almost three meters tall, and although he was running, his progress was slow and dream-like. The Professor had disappeared again and the police were drawing closer.

As Stones drew nearer, the effects of the virtual field shrank him to something like Vernor's size. Vernor leaned out of the hatch and tried to pull him inside with one hand, while fumbling for the controls with the other.

The police had arrived at the main work area. The scale-ship had shrunk enough so that they looked seven meters tall. Vernor was seized with an irrational fear that they would stomp on him. This was impossible, of course; as a foot approached the ship it would enter the field and shrink in size.

A last heave and Mick was in the ship. "Crank it up, Vernor!" he yelled with some enthusiasm. "I always wondered what atoms looked like."

TO BE CONTINUED

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Update:

Only three months after his art was featured throughout *Unearth* #6, **Clyde Caldwell** has become one of the most sought-after of all sf/fantasy artists. His assignments to date:

Zebra Books — Front cover and interiors for *Oron*, by David Smith (will appear September 1978).

Heavy Metal — Back cover, July 1978 issue. Front cover, August or September 1978 issue. 1979 *Heavy Metal* Calendar.

Ace Books — Front cover for *Sign of Proteus*, by Charles Sheffield (November 1978).

Avon Books — Front covers for *Mind of My Mind* (November 1978) and *Survivor*, both by Octavia Butler.

Issue #6 also proved an excellent showcase for the talents of **Craig Gardner**, *Unearth's* consulting editor. He is currently negotiating publication rights to an expanded version of "Rocket Roll" (cover story in #6), and has sold a story, "Just One Song Before I Go," to Zebra Books for the second volume in the *Chrysalis* series of original anthologies. Earlier, he made a sale to *Fantastic Magazine*: "A Malady of Magicks," which will appear in the September 1978 issue.

D. C. Poyer, whose "Act of Mercy" was featured in *Unearth* #5, has since sold stories to *Analog*, *Galileo*, and *Isaac Asimov's Science Fiction Magazine*.

FILM

Full of Sound and Fury

I was impressed but not satisfied by *The Fury*. Brian de Palma's new film is a continuation, both in subject matter and style, from his previous feature, *Carrie*. Both movies deal with varieties of telekinesis and even share a common plot: young people find they have extraordinary powers that they don't know how to deal with until circumstances over which they have no control force them to use the powers to bloody ends. Both are generally well made, entertaining movies, laced with de Palma's personal touches. But it's within these touches that the roots of my dissatisfaction lie.

De Palma began his professional career in the late 60's with a number of "little films" — *Greetings*; *Hi, Mom*; *Get to Know Your Rabbit*. All three films dealt with "topical" issues, and all three share de Palma's personal humor — absurd situations in an absurd world. *Greetings*, for example, concerns the extreme lengths three young men will go to to escape the draft and Viet Nam. In an early

Craig
Gardner

scene, one of the three (who is white) enters a bar in Harlem and says something derogatory about blacks. He is promptly thrown out. To his dismay, he is only beaten and bruised a bit. He was hoping they'd at least break an arm or leg so he'd flunk his pre-induction physical.

These films appealed to a special audience — the so-called “youth market” — de Palma's peers, who had grown up with him in an absurd world — a world where early on you learned about Communism and the Bomb, and a basic part of your elementary education was hiding under your desk when the drill whistle sounded “so you wouldn't get cut by the flying glass.” A world where all the heroes were shot down and Walter Cronkite brought you the war every night, interspersed with commercials for aspirin and life insurance.

The films never did that well commercially. Unlike *Easy Rider* or *The Graduate*, they were poorly distributed, with little money for publicity. But de Palma did manage to gain a cult following, and, somehow, he kept on making films: less topical, more commercial, but still quirky — *Sisters*, *Phantom of the Paradise*. And finally to *Carrie*, de Palma's first big success. His breakthrough film. A movie at least partially concerned with adolescent rites of passage, it featured an amazingly

accurate recreation of a senior prom — sort of an Everyprom — that served as a centerpiece for the film, and gave the title character a transcendent moment to counterbalance the bizarre and terrible events at both ends of the film. Not a perfect movie, but oddly satisfying, with one of the most terrifying conclusions ever put on film. The absurd edges were there, too; the teen-age girl who always wore a baseball cap (even to the prom), the fast-motion sequence where the boys pick out their tuxedos.

And so *The Fury*, a film based on the time-honored Hollywood tradition, Don't Mess With Success. I've already mentioned the basic plot similarities. Both films also feature Lotsa Blood and build to Slam Bang Conclusions, followed by denouements straight from the Grand Guignol.

Yet, *The Fury* doesn't work as well as *Carrie*. It's more of a traditional Hollywood film; one long chase — the good guy (Kirk Douglas) relentlessly searching for his son, and just as relentlessly pursued by the bad guy (John Cassavetes). The actors, Douglas in particular, give credible performances within the limits of their roles. But the screenplay, written by John Farris, from his novel of the same name, doesn't allow these limits to go very far. It's Action, Action, Action, and, as the somber music of John Williams (where have we heard that name before?) swirls

over the opening credits, we know *it can come to no good end*. We are pulled on a roller coaster ride to the conclusion, and there's no place for character development on a roller coaster ride.

Still, de Palma does manage his quirky moments. Early on in the film, Douglas escapes a group of pseudo-CIA agents under Cassavetes' command, and drops into an apartment with only underpants and a gun. There he meets the Knuckles family; a middle-aged couple who are terrified of him, and Mother Knuckles, an older woman who thinks what Douglas is doing is just fine and keeps feeding him cookies. Later in the movie, Amy Irving (who plays a young woman with telekinetic powers) is shown around the psychic institute where she has come for help. One room is full of institute members conducting experiments behind large lettered signs that identify what they're doing, sort of like some high school science project gone crazy. Two of the deadly pseudo-CIA agents spend a large amount of time attempting to trade a half cup of coffee and a candy bar via walkie-talkie.

De Palma often introduces characters and situations in an off-balanced way. Early on, while major characters talk outside the psychic institute, behind them, between them, and always out of focus, we see a jogger run up out

of a park and perform stretching exercises for the length of their conversation. The jogger is later revealed to be one of Cassavetes' agents. In a later scene, we are reintroduced to Douglas' son, as a small figure on the far right hand side of the screen who repeatedly tries to pole vault over a high jump while other characters talk in the foreground. His placement and repeated vain attempts to clear the bar are ridiculous. The audience laughs.

All these scenes help reaffirm de Palma's vision of an absurd universe. But this time it is a vision without substance, for the characters aren't complete enough to react with this universe. The closest thing the movie holds to a hero — Kirk Douglas — gets bumped off before the film ends, and the audience is left floundering. Douglas is also the closest thing in the film to a real human being. And he doesn't come all that close. Everyone else is a cipher — a type: Young Girl Scared of Her Powers; Young Man Angry at the World; Unscrupulous Man in Love with Power; Woman Who Uses Her Body for the Good of the Agency; etc. No one gets into the characters, because there're no characters to get into. The bloody ending of the film shocks us, but there's no catharsis, because by that time the audience has no one left to identify with.

What de Palma's given us here is

half a good movie. Were some of the characters fleshed out, given some real depth, some honest humanity, we might have had a very good film. But *The Fury*, lacking the warm moments at the center of *Carrie*, is much less of a film.

I don't know if de Palma has ever been that strong on developing characters, rather than types. In his early, more satiric films, it didn't matter all that much. The characters he gave us reflected parts of ourselves in situations we could identify with. Now, with his

straighter themes, these surface characters are no longer enough. De Palma needs to give his characters a chance to grow, to develop within his world view, if he is to make great films.

De Palma's next project is a film version of Alfred Bester's *The Demolished Man*. If Bester's characters can make it intact to the screen, we may have a great film there. Who knows? It could even turn out to be that rarest of rarities, an adult science fiction film. ●

Random Motes

Effective immediately, *Unearth* will accept submissions from writers who have made as many as three sales to professional science fiction magazines and anthologies. We will continue to seek manuscripts from writers previously unpublished in professional sf markets.

The *Unearth* Story Contest is closed. All entries in the first category are still under consideration as this issue goes to press. Most entries in the second category have been returned to the entrants; winning entries have not yet been chosen.

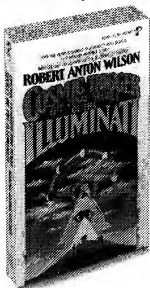
Winners will be notified by mail, and all winning entries will appear in future issues of *Unearth*. Contestants who did not include a self-addressed, stamped envelope will not have their entries returned.

New subscription rates are now in effect: \$5.00 per year, \$9/2 years, \$13/3 years. Canadian subscriptions are \$1 extra per year; all others outside the United States must add \$2 per year. We ask that all foreign subscriptions be paid in U.S. funds.

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**Text and prologue by Robert Anton Wilson;
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It was drizzling, but the little boy who lived downstairs ignored the water that ran in rivulets on his wizened monkey-face, across his broad nose and dark skin. He crouched motionless in the backyard, staring at a sparrow on the fence, a slingshot dangling from his hand. He gripped the leather pouch and drew back his arm with an infinite slowness that seemed alien to his surroundings: the row of nearly identical red brick houses, the clotheslines strung from wooden second story porches. He let go the pouch and the bird keeled over neatly like a target in a shooting booth.

The little boy walked through weeds that stood nearly up to his waist, picked up the small gray bird and examined it closely. He did not notice Danny and Jessica, who stared at him from the ground-level basement window. The bird was still alive, just stunned. He took the bird inside the house, looking right and left with his crinkly old-man's eyes.

Inside the apartment, Johnny Silveira held the tiny bird to his cheek. He listened to the fluttery heartbeat and smiled. Of all animals, birds reminded him most of his first home, a green world of river and jungle, the Brazilian *selva*. He barely remembered the little village by the river where the men in flat-bottomed boats would stop to buy a drink and stretch their legs. There the sun would

*It was a lazy, long summer —
too long for Danny and Jessica.*

INDIAN SUMMER

by Neil Olonoff

beat down each day like a blacksmith's hammer. His mother had her muslin-draped stall near the jetty, where she sold the fishermen lucky pieces and charms to ward off piranha. Sometimes one of the local women would buy a vial of bath oil to lure a man, or the incense that drove away in-laws. But Johnny saw all this as if through a veil of gauze; the only clear picture was of the man who came from the city and took them both away, that and the last view of the little village as it disappeared around the river's bend.

The sparrow's heart stopped beating. Johnny looked down sadly at the tiny creature in his hand. He trotted into the bathroom and set the bird on the edge of the toilet. He reached up to the medicine cabinet for one of the double-edged blades Mr. Silveira used in his razor. Carefully, he unwrapped the fresh blade. Without ceremony he slit the sparrow's throat and waited the few moments necessary for the blood to drain out. The water in the toilet became pink. He flushed it, then wrapped the bird in tissue. He would wait until dark to bury it.

It was Saturday, the rain had been falling since early morning and now it was four o'clock. Since watching Johnny and the sparrow earlier that afternoon, Danny and Jessica had become bored. They were in the well-lighted middle section of the basement where two

poles supported the ceiling. Danny had been swinging around one of the whitewashed poles and he looked at his hands, smudged white on the palms. He rubbed some of the white stuff on his cheeks. Jessica, rummaging in a box that contained bolts of cloth, had her back to him. She was holding up a piece of velvet-like material printed with tiger stripes. He walked up behind her and made a deep noise in his throat, like a growl. She turned and saw his white cheeks.

"Ha, ha," she said, "don't you look cute."

He laughed and made a horrible grimace, running into the darkest part of the cellar, where the oil burner made it uncomfortably warm.

"Hey," he said, "If someone didn't know I was down here and came down those stairs..."

Jessica giggled and draped the cloth over her head. "Yes, and I could come out like *this!*" She ran toward Danny, her arms upraised and hands looking like a cat's claws.

They considered likely victims for the prank. There was Johnny, of course, but they didn't know him very well yet and weren't sure what he would do. He might tell. Then there was Marty, Danny's younger brother. But he was only five, and certain to cry. They huddled in the fetid darkness talking in whispers. Danny let his arm fall

across Jessica's shoulders, acting as if it were something casual. However, his heart was beating rapidly. She didn't look up at him but he could hear her breathing, which sounded expectant. Finally he reached around and pulled her chin up a little. Her eyes were round and curious and did not close when he kissed her on the lips. He searched her face but could read nothing. She jumped away with a little shriek and ran to the box of cloth. She pulled out the tiger-striped piece and drew it across her face like a dancer in the Arabian Nights. She still thinks I'm a kid, he thought. The plan to lure someone down the stairs had been forgotten. Rain still pattered on the windows. Time had seemed to stop and resume in that moment.

Danny heard his mother calling his name and said, "Damn! I gotta go."

But they didn't want to go out the front way, through the garage; his mother would see them come out. They pushed the ladder up against the window and clambered out into the backyard. The rain was just a light drizzle. Danny ran up the wooden backyard stairs which led directly to his bedroom. From the back porch he could see down the line of identical houses. A few moments later he saw Jessica up on her porch, four houses down.

His mother was standing in the

front doorway calling out his name.

"I'm here," he said.

"Oh, there's something I want you to do."

"What?"

"Show Mr. Silveira down to the basement. Help him carry some boxes down there. Daddy gave him the area by the oil burner."

"Okay."

Danny went down the brick front steps and knocked on the tenant's door. Mr. Silveira, Johnny's father, came to the door. He was everything the mother wasn't, light-skinned, tall and smooth-faced. His hair was dark and his eyes gleamed; Johnny's eyes were flat and dull, as if they had seen too much of life even at his young age. Mr. Silveira seemed to be a very modern man, and he spoke very good English, though with an accent. Danny had heard Mrs. Silveira speak English only once; it was halting and almost indecipherable. She was a dark, small woman who never came to visit any of the others on the block. They seemed mismatched, this handsome, modern man and the woman he had married, whose high cheekbones and wide nose gave her the look of an Indian. For all Danny knew, she might have been an Indian; weren't there Indians in the jungle, in Brazil?

He didn't see Johnny or the mother, as Mr. Silveira showed him a small stack of boxes in the

front room. Their apartment had a musty odor and Danny thought about the sparrow, wondering if it was still in the house. Mr. Silveira and Danny each took a box and they went around the front stairs and into the garage, down the rickety basement stairs Danny had helped his father fix. They put the boxes in the corner near the oil burner. It took two trips to get all the boxes downstairs and then Mr. Silveira gave Danny fifty cents.

Upstairs his mother asked, "Did you help Mr. Silveira with his boxes?"

"Yeah. Gave me fifty cents."

"That was nice of him."

"Yeah."

Mr. Silveira stared out the window of the subway car. It shook like the night-train he sometimes rode from Sao Paulo to Rio de Janeiro. You would go to sleep in Sao Paulo and in the morning go to breakfast in the dining car, looking out to see the morning sun throw glitter on banana palms, and for once the *favelas* seemed almost pretty.

The traveler in Brazil, riding a train through Sao Paulo, is shocked by a first view of the primitive shantytowns, called *favelas*, which nestle along the tracks. Dirt roads, rudimentary water supply and sewage, bottle-gas stoves and a general air of hopelessness characterize the slums. Mr. Silveira remembered

his boyhood in a *favela* which hid in the shadow of a giant *futebol* stadium as he would recall an unpleasant dream. His father had deserted his mother and him when he was twelve, and soon they had found themselves in a tiny dirt-floored shack. On game days he would earn some money "watching" cars or selling candy.

The army took him at seventeen to Amazonas, a jungle state so large that in the year of his tour they discovered both a new river and a tribe of Indians. Nearly impenetrable across land, the *selva* hides its secrets well from the air. Most of the Indians do not care for whites, especially the *militares*, who in the past killed Indians with guns and once with blankets infected with smallpox.

The Indians, like the blacks in Brazil, believe in magic, and some have been converted to one of the three kinds of spirit-religion. When Mr. Silveira met the woman he eventually married, she wore charms protecting her from river snakes and piranha. She had the reputation of a witch, but all he knew was that he found her inexpressibly attractive. Some of the men in his platoon made fun of his fascination for the woman, but these did not remain his friends.

They were married in Sao Paulo, not far from the large soccer stadium he had known as a boy. He seldom wondered at the streak of luck which followed the marriage:

the job with Westinghouse, the quick promotions, the scholarship to study English, his professors' patience and kindness, and the phenomenal offer to come to Brooklyn College as "Visiting Adjunct Professor of Languages," a newly-created position. But he *had* worked hard, he sometimes told himself when he stopped to marvel at the successes of the past eight years. These considerations never lasted long, as he believed them to be useless woolgathering.

The Indian woman he took for a wife was aware that the *influence*, as she thought of it, could not work on the doubtful or critical.

The train rumbled into his station. The pretty blonde coed was waiting by the turnstiles, as they had agreed. They kissed and began the short walk to campus.

That spring Danny and Johnny became friends. Johnny still had slight command of the language, but the words he knew were ample for their backyard games. Most often they would pretend to be in a jungle, though Danny hadn't played that sort of game for a while. But with Johnny, who had been in the jungle, the game acquired an immediacy he had never experienced. However, he could never stand as still as Johnny, or stalk as well, or "smell the wind," as Johnny called it.

Once, while stalking a squirrel in the yard, Danny had inadvertently

killed the animal with a stone. He hadn't meant to kill it, only to come close. Once it had been done, however, he was pleased with his skill.

"Look!" he shouted. "Dead as a doornail!"

Somber-faced, young Johnny trotted over and squatted beside the dead squirrel. A breeze fluttered the tail-fur. "Good," he said.

Then he horrified Danny by taking out a small blade and slitting the squirrel's gray throat. Johnny calmly watched the blood seep out into the unplanted earth.

Danny turned his eyes away. "Why?" he asked. "Why did you do that?"

"Have to," said Johnny, "let out. . . ." He seemed to be groping for a word. "Let out ghost."

Danny almost smiled. The poor kid, he thought, he sure has a lot to learn. "Johnny," he said, "there's no such thing as ghosts, and especially not animal ghosts."

It was Johnny's turn to act knowing. "Are ghosts," he said, "I see ghost."

Danny decided the case was hopeless. "Sure," he said.

But Johnny didn't want to let the matter rest. "Not see people-ghost. Animal-ghost," he said earnestly. "Ghost come to eat food, mixed with *this*." Johnny pointed at the ground.

"You mean dirt?"

"No, *this*."

"Oh, you mean blood."

"Yes, blood." The wizened little boy pronounced it like *blowed*.

"Well, what makes it come?" asked Danny, getting interested.

The younger boy furrowed his dark brow. "*Odio*," he said.

"What's that?"

Johnny couldn't remember the word in English. They had to go into the house to use his father's large, green Portuguese-English dictionary.

"Hate," Danny read, and shut the book. "You mean hate."

The little boy nodded confidently.

"I don't believe it," said Danny.

Danny learned about the Silveiras' marital problems the way all children learn neighborhood secrets. At night he could hear the conversations of his parents in the front room.

"Shameful," he heard his mother say, "and right here in the neighborhood. It's been going on for months, and she hasn't an inkling."

"Now, don't go getting involved."

"I *do* feel sorry for her."

"So do I, but it'll probably blow over without any help from us."

"Maybe." His mother sounded unconvinced. "I can't stand a man like that, who thinks he's God's gift to the universe."

"It's their first year here. They haven't gotten used to things yet,

or at least she hasn't, to hear him talk."

"I don't imagine," his mother said. "I had to show her how to use the washer at the laundromat."

"They probably don't use the same kind in Brazil."

"You can say that again," she said. "Do you know that for the first three months they were here she did all their laundry by *hand*?"

"You're joking, aren't you?"

"I wish I were. I was so surprised the day I found out, you could have knocked me over with a feather."

"Kind of sad, a man like him married to a woman like that."

"You *would* take the man's side, when he's so obviously in the wrong. I saw him at the subway station not four hours ago, kissing some coed goodbye, and you're making excuses for him."

"All right, all right, he's in the wrong. I'm not disputing that. It's just that there might be extenuating factors."

"Just one. He's a no-good run-around."

"You're so tolerant."

"And another thing. My friend Sylvia says he's developing quite a reputation over at Brooklyn College. Remember the cherry trees?"

"How could I ever forget?"

"Well, ask Mr. Silveira about them sometime."

"I'll be sure to do that."

There was a pause. Then he heard his mother say, "What do

you suppose attracted him to her in the first place? Do you find her attractive?"

His father snorted. "Not hardly! I don't know. She must have something going for her."

His father said something in a low voice, and laughed.

In the Sheepshead Bay Station of the Brighton-Manhattan Subway line, Mr. Silveira was kissing a pretty blonde girl, one of his students, goodbye. After weeks of meeting secretly in various places on campus he and the girl had grown casual in their encounters.

Sitting at her kitchen table, smiling blankly at a spot on the wall, Mrs. Silveira experienced a spasm of pain. She doubled over and felt for a moment that she would retch; then she had the distinct impression that her lips were burning. Looking up and out the window, her eyes narrowed to slits. Mr. Silveira came home fifteen minutes later, but she never mentioned the incident.

The Silveiras went on a trip to Brazil and were gone three weeks. They gave Danny a small mineral collection on their return. About a week later, Johnny knocked on the upstairs porch back door, which led directly to Danny's room. Johnny stood on the porch looking like a tiny old man. He was excited. "Come," he said, "show something."

Mr. and Mrs. Silveira were away. Downstairs in the apartment several new things brought back from their trip were on the walls. There was a painted wooden mask with feathers sticking out and eye-holes to see through. Johnny showed him a gourd with lines filed into it with a net of beads that made noise when you shook it. There were some spears and there was a cup made of stone, with a little cover that fit into the top.

Johnny thrust the cup at Danny. "Feel stone," he said. Danny put a finger to the stone, which felt like soap. Johnny ran a fingernail under the base of the cup and showed Danny the mark it left.

"Soft stuff, huh?" asked Danny.

"Yes, soft," said Johnny. The cover was taped to the top of the cup. Johnny pried off the cover and showed Danny a brown substance inside.

"Food," said Johnny, "to mix with blood. Food for animal ghost. See?" he asked happily, as though that proved his point. He put the little stone cup on the mantel under a picture of a raft on a river.

As summer began, Danny and Jessica continued to meet in the basement whenever they could. Neither wanted their friends to know about their trysts. They had a secret signal, a motion with the hand. One of them would make an

excuse and run home. A few minutes later the other would leave, and then they would meet down in the basement of Danny's house.

Jessica always wanted to pretend that they were married. Danny would have to carry her across a threshold, and then they would get to kiss. They didn't really understand kissing very well yet, and they had only the barest idea of the other things grownups did. Late at night, Danny would try to imagine those other things. He discovered what they were like from books, but could never succeed in translating the words into feelings. For him the only reality was that of Jessica's dry, quick kisses. He supposed that he was in love. He had no intention of telling her that, and he would sooner die than tell anyone else. It was his secret and his alone. He was twelve, she thirteen.

That was the summer of the Maniac. The whole area, from Sheepshead Bay to Brooklyn Heights, was terrorized by a series of brutal murders. All the victims were women, and all were young. You didn't see too many girls out alone at night that summer. That year it would stay warm until October, and the newspapers would call it an Indian Summer.

Near the end of August, Danny and Jessica confessed that they loved one another. Two weeks later school began. Danny went to a Junior High in Flatbush. Jessica

went to St. Luke's in Coney Island. They didn't see each other as often, but they still claimed to be in love. They still met in the basement to talk where no one else could hear, though their games were now different from those of the summer. They had both learned a bit more about sex. Now they considered the marriage game a bit childish and silly, though they had not yet hit upon a suitable substitute. Another thing: the difference in their ages had finally taken on a real significance.

Jessica's breasts had started to grow, and her legs were beginning to look like those of a young woman instead of a little girl. Her mother now let her put a touch of lipstick on her lips, the barest hint of rouge on her cheeks. Her eyes seemed more deep-set and somehow more mysterious than the ones Danny remembered from the year before. She no longer seemed willing to go along with any idea that popped into his head.

Danny would look in the mirror, searching for signs of similar progress in himself. He started doing deep-knee bends in front of the mirror and would spend inordinate amounts of time in the bathroom flexing his muscles, to no avail. He couldn't find the least indication of hair on either chest or chin. Nor could he detect any change in the muscles of his frail, boyish body. It was evident that Jessica was out-distancing him.

The body of a young girl, thought Mr. Silveira, is a fine thing. He rolled over on the bed and reached for a pack of cigarettes. The redheaded girl beside him raked her fingernails down his spine and made a sound like a cat.

His wife, the woman from Amazonas, who still sometimes preferred to do the laundry by hand, was at that moment pinning laundry to a clothesline. Her body stiffened and her back arched. Her face contorted in an expression of such anger that Johnny, who had been playing in the backyard, became alarmed.

"Voce nao esta doente?" he asked in an urgent tone.

"Nao. Vai brincar. Tenho algo para fazer," she said.

He watched in dismay as she let the wet shirt fall to the earth and went inside without a word. He went into the apartment and found the bathroom locked. He listened at the door and heard nothing. Perhaps a quick sharp cry, just once, like a needle-prick. He sat in the middle of the living room staring dully at the carpeted floor. He looked up at the mantelpiece. The stone container was not there. The little boy began to cry.

Danny came home the next day with the smell of bus exhaust stinging his nostrils and the sound of children's shrieks in his ears. When he tried to remember that day later on he could still hear the screams

of the children, and he seemed to see them running in criss-cross patterns in front of him, though he did not remember their faces. "Maniac, maniac!" was what they were shouting, and he didn't understand why. There was a crowd of people in front of his house and the flash of an ambulance suddenly came around the corner. His mother stood by the doorway to the Silveiras' apartment with a policeman. Her face was white and drawn. He went immediately to her side.

"What is it, ma?" he asked.

She gripped his shoulder and said, "Wait for me upstairs."

He had seen through the front window. Most of Mr. Silveira was hidden by the tatters of rug and shards of furniture, but the blood had been thrown all over the apartment. Danny had never seen a corpse before and he felt a thrill go through his body, like electricity. Later on, after the police had taken away the body, he went downstairs when he was supposed to be in his room. He could see the men flash-photographing the room and two men were scraping at a wall where there were three deeply-gouged scratches in the plaster, more or less parallel to each other, about a foot from the ceiling. One of the men stood on a ladder and the other held a lamp toward the scratches. In a corner of the room there was a plastic tarp on which most of the things in the room

were piled. Danny saw the little stone jar fallen at the base of the pile, its cover broken and contents strewn about. The middle of the room was caked with blood in a spot about four feet wide.

There had been no sign of Johnny or his mother since the day before, when they had been seen leaving in a taxi. Their clothes were gone from the closets.

That night Danny woke when he heard voices from the front of the house. His father's voice, the smell of coffee, and another man's voice, asking questions. They were talking about Mr. Silveira, and why anyone would want to kill him. Two women had been murdered in much the same way; maybe it had been the Maniac, but it wasn't quite the right style. The man kept asking about the scratches on the wall, and then he asked for more coffee. Danny could hear the tinkle of china. The man's voice sounded tired and defeated.

Danny's mother asked about Mrs. Silveira and Johnny.

"Look," the policeman said, "we don't really know. Would you mind keeping their things here?"

There was a pause, and Danny's father said, "I suppose there's no danger in it."

"I wouldn't have asked if I thought there was. But we'll be watching the house for a while. Sometimes they come back."

"Will the basement be good

enough for their things? There are already some boxes of theirs down there."

"The basement will be fine."

A few weeks later the police stopped coming around and Danny's parents were told they could rent the apartment again. Of course, they had to replace the carpeting, and the painters had to get on a ladder and fill the gouges in the wall with spackle. By the time they were through, the apartment downstairs had lost its old musty odor and smelled new again, or at least smelled of paint and plaster. A couple moved in with their little girl. Their name was Rooney, and they were friendly but not outgoing.

It was a warm Saturday exactly in the middle of October. Danny sat on the upstairs front porch in his undershirt. The canvas awning was down, but the air was still and hot so the shade was little help. The air shimmered over the gutter and the big maple tree in front seemed to droop with exhaustion. Geoffrey had come over from across the street and was trying to convince Danny to go downstairs.

"We could work on the clubhouse," he said. "I got some great boxes we could use."

"No, I don't want to," said Danny. Downstairs, in the street, the little kids were laughing and screaming, playing "maniac." The heat made the children's voices

sound thick and close.

"Aww, you're scared to go down," said Geoffrey. "You're scared because of the maniac."

"I'm not scared. I just don't want to go down there now."

"Cause you're scared."

"I am not."

"Are."

"Oh, heck," said Danny. "All right, let's go get the boxes."

They went down the brick stairs and walked through the almost palpable heat toward Geoffrey's house. Through the shimmering air Danny could see two people standing on the sidewalk in front of DeFelippo's Drugstore. He got a little closer and could see a tall boy on a bicycle, wearing a leather jacket, his collar pulled up as though he were cold. Danny stared at the person with him as he bent toward her and seemed to kiss her, and through the haze he could see that it was Jessica. They turned and saw Danny and Geoff. Jessica pointed at them.

The large boy with the leather jacket got on his bicycle and rode directly down the sidewalk toward Danny and Geoff. Danny said nothing when the boy rode up beside him and said, "You stay away from Jessica."

Danny was forming a reply when the boy suddenly hit him, very hard in the face, and rode away. Danny's glasses fell and shattered and when he put a hand to his face it came away bloody.

Through a red haze of pain and shimmering air he imagined he saw Jessica at the corner staring after him as he ran home. Geoff kept on saying, "Man, he really hit you, didn't he?"

Danny told Geoff to go away; he wanted to be alone, so he ran through the garage and down to the basement with the hollow sound his footsteps made on the wooden stairs. He didn't even think to turn on the light, and slammed an elbow against the rough wall.

Nearly blind with pain and rage he knocked over a stack of boxes near the oil burner and heard their contents spill across the concrete floor. When he switched on the light he saw Johnny's soapstone cup, broken now, the brown stuff scattered.

His fury rose in a way he had never felt when he saw the tiger-striped velour Jessica had used to tease him. "Bitch!" he screamed at the cinderblock walls. "Rotten bitch!"

He tried to rip the cloth, but the hem defied his strength. Hooking it on a metal peg meant for his father's tools, he yanked with both hands, thinking of Jessica's face, wanting to hurt her and the boy with the leather jacket. For a moment, the image of hate filled his mind's eye. His muscles knotted in a spasm of fury. The cloth suddenly gave and his hands jerked down, grazing the blade of

a saw and opening a jagged cut that spurted bright arterial blood. He felt hate wash over him like wind. His pain seemed transformed into the image of the boy and Jessica, the two of them lying dead. The image swelled in his imagination. In the dust and debris where his blood was dropping, something stirred.

It had no form at first, only substance, and even the nature of that was elusive. It was whitish and lumpy and slow-moving as it sought the blood and brown stuff on the floor. With no noise and little motion the small thing ate and grew.

Danny stared at it and stepped closer, thinking at first it was a rat. He noticed the smell — wet fur and something indefinable. Certainly

he had smelled that musty odor in the past. Before he realized he was seeing *through* the small shambling creature, the thing had grown, and grown, and was towering over him and he felt a scream rising to his throat. The eyes were malevolent.

Johnny's words jumped back into his memory: "...mix with blood. Man blood, ghost kill people, animal blood, ghost kill animal." And *odio* meant *hate*.

He started to back away from the thing, which was now monstrous in size and showed claws and fangs. It advanced. Behind him he heard someone clattering down the old wooden stairs. The thing rushed past as Danny thought, no, I didn't mean it, but it was much too late and Jessica hadn't even time to voice a scream.

Going, Going, ...

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Up the Walls of the World, by James Tiptree, Jr. Berkley/Putnam, 1978, 319 pp., \$8.95.

New Dimensions 8, edited by Robert Silverberg. Harper & Row, 1978, 213 pp., \$9.95.

Orbit 20, edited by Damon Knight. Harper & Row, 1978, 248 pp., \$9.95.

James (Alice Sheldon) Tiptree is one of the best short story writers in the sf field. I approached her first novel, *Up the Walls of the World*, with a mixture of anticipation and trepidation; I left it with equally mixed feelings. It is a novel of enormous scope, its focus shifting from a planet of aliens, the Tyrenni, who look like enormous energy-jellyfish and perceive light as sound; to an even more enormous alien juggernaut that devours suns and is threatening the world of the Tyrenni; to a number of humans involved in a study of extrasensory perception. Through the experiments of the Tyrenni and the humans, and the mission of the Destroyer, all the elements are drawn together.

The earliest portions of the book are marred by rather baldfaced presentations of Tiptree's views on child-nurturing and male/female roles. It is not the feminist stance that is bothersome here, but the

BOOKS

Rosemary
Herbert

Jeff
Frane

fact that what she is saying is so *obvious* and that it is all so poorly integrated into the story. These aliens are divided into two sexes: one producing the egg, the other carrying it to term and later nurturing the young. How can either be called male or female? It's all very well to have the aliens hampered by sex roles, but why should they be *our* roles, even reversed?

Tiptree also seems to be dealing with the question of identity. Each of the characters makes at least one shift to another physical form, sometimes several, yet their *identities* remain the same. Tiptree's enormous gift for characterization allows this shifting to succeed, without the author having to stop and point out the importance of the message.

Up the Walls of the World is not a perfect novel. There are problems with the design of the book (the Destroyer's viewpoint chapters are set in full caps, so that it always seems to be shouting); at times, it feels as though Tiptree is trying to add too many ingredients to the mix; and characters die, quite dead, and then are miraculously revived. Something about the book works, however, and it manages to create that oft-cited, seldom-found Sense of Wonder.

A number of the stories in *New Dimensions 8* are suffused with a sort of techno-surrealism, the presentation of a future too bizarre for us to comprehend. In itself, that is

a worthwhile idea, but it becomes monotonous and enervating through repetition, and is never enough to sustain a story. Unfortunately, too many of the selections here have nothing else to them — they are empty. The stories may be written in a more contemporary style, and revolve around more recent ideas, but they remain as much *idea* stories as the worst products of the Campbell years in sf. For the most part, they lack the same small, human touches that are lacking in Silverberg's own fiction.

The best piece here is also the longest, Greg Bear's "Mandala." Bear does deal with magical technology (godlike, in fact) — sentient, mobile cities that have ejected their occupants because of human fallibility — but what makes the story work is that the principal character draws our sympathy through his accessibility. Bear writes clean prose, without any of the verbal pyrotechnics that clutter so many of the other stories in the anthology.

In "Metal," Robert R. Olsen likewise writes of a city in the far future, in an unpeopled world, and succeeds in gaining empathy for his non-human characters — subtly anthropomorphized ore carriers. Olsen even succeeds in making the present tense work within the story, a feat that others here (Jack Dann, Daniel P. Dern, Gregor Hartmann, Jeff Hecht,

and Drew Mendelson) attempt and fail.

J. A. Lawrence and Daniel Dern create idea stories with a leavening of humor. Lawrence's "This Is My Beloved" twists the nature of Beauty and Sanctity with wit. "Yes Sir That's My" treats an idea getting a lot of workouts lately — male pregnancies — and nearly pulls it off. If only he hadn't pissed away the ending, and had steered clear of the present tense.

Damon Knight's *Orbit 20* provides a much higher percentage of good material. For some inexplicable reason, *Orbit* has been discontinued (there hasn't been a paperback sale since #13, but why?); this is apparently the last volume in a series that has consistently provided the highest quality sf.

This volume is led off by Kate Wilhelm's novella, "Moongate." Wilhelm writes brilliantly, and here creates something entirely alien by playing it off against the commonplace terrain of Eastern Oregon. *Something* is taking place out there, on moonlit nights, something that is interpreted differently by each of the three main characters. Each is searching for, not only the meaning of the phenomenon, but meaning in life. Wilhelm is one of the very best stylists writing today (not writing *sf*, but *writing*). She has an incredible grasp of mood, image, and characterization and weaves tiny

reflections of the total pattern into the story.

Gene Wolfe's novella, "Seven American Nights," closes out the anthology. This is vintage Wolfe, with his fine, gem-like prose and keen eye for the precise word. In the story, an Iranian gentleman is visiting an America crippled by its own luxuries — a victim of conspicuous consumption. Wolfe adds an element of ambiguity: the protagonist may, at some point in the narrative, have ingested a hallucinogen, but the reality of his world is so subtly different one never really knows for certain.

In between these two superb stories (either of which is worth the cost of the book, and both of which are likely to be award contenders), is a collection of tightly written stories. Newcomer Philippa C. Maddern has a marvelous alien-contact story, " 'They Made Us Not To Be And They Are Not' ". Ronald Anthony Cross' "The Birds Are Free" is an effective story of gurus and dedication. There's a Lafferty fable, humorous pieces from Pamela Sargent and Steve Chapman, and some black humor from Terence L. Brown. The whole volume is rounded out by the usual selections of writing that the editor wishes to share, notes on the contributors, and an index to the last ten volumes of *Orbit*.

— Jeff Frane

The Martian Inca, by Ian Watson. Charles Scribner's Sons, 207 pp., \$7.95.

A Double Shadow, by Frederick Turner. Berkley, 215 pp.

The Hearing Trumpet, by Leonora Carrington. Pocket Books, 192 pp., \$1.75.

If I had to choose one word to describe the chief strength of Ian Watson's excellent novel, *The Martian Inca*, that word must be *convincing*. Now if you're looking for a book which is well-written, strong on plot and characterization, imaginative, intricate, suspenseful, thought-provoking and just plain enjoyable, *The Martian Inca* is all of these but still, its chief strength lies in its power to convince.

Here is a book which pulls together a very unusual sampling of people, places and other-worldly life forms, without in the least straining the reader's disbelief or patience. Ian Watson has set himself no small task in juxtaposing isolated Andean villagers with a three-man American space team en route to Mars, and describing the self-revelatory experiences of these very different individuals, induced by contact with a component of Martian soil. At the same time as these representatives of mankind discover their common humanity and a glimpse of an alternate future for the human race, the American-Soviet space race and its

goal of molding or "terraforming" worlds to accommodate human is presented as not unlike American imperialistic maneuvers in South America. Meanwhile, the daydreams of one astronaut about his sculptress/wife further dwell upon the construction of alternate human futures: the sculptress not only bears a natural child but molds sculptural playmates who represent all possible alternate forms her daughter might have taken.

No review of this book would be complete without mention of its most fascinating character, a Bolivian miner who discovers his Inca heritage through the self-revelations brought on by contact with Martian soil. Again that word *convincing* must be applied; Watson must be congratulated upon his believable portrayal of Julio Capac as the character *literally* rises from the oppressed life of a miner to revolutionary leadership to martyrdom — and the scene of his martyrdom is alone well worth the price of the book.

Frederick Turner's book, *A Double Shadow*, is not so successful in its attempt to portray the unusual. In this difficult, cerebral book, the author — whose previous work has fallen into the category of poetry — is continually and admittedly preoccupied with the structure and the act of creating his fiction. While he wishes for the characters to take charge of

their own story, he also repeatedly interjects his own identity as author into the work in a manner that is disconcerting to a reader who is already straining to accept his premise that the characters may take control. As this book is being reviewed from proofs, specific quotations cannot be used but paraphrases can: for instance, the author compares freedom to an uncomfortable chore at best, a frightening void at worst and then declares that for a writer it is certainly a burden, although the writer makes his living using it. The book is full of such philosophizing, as characters bearing the names and sometimes the personae of Ancient Greek deities try in vain to give meaning and challenge to their empty lives on the planet Mars. It seems that, although they are equipped with powers of the "Vision" (including powers of instant communication, ability to control pain, etc.) as well as sexual freedom and prowess, they crave a sense of purpose and conflict in their lives which can only be provided by the declaration of "status war" between two factions. The author's poetic background often adds beauty or sad tension to a series of erotic scenes and, to give him credit, much of his philosophizing is thought-provoking, but it fails to mesh well with the story. The reader becomes uncertain as to whether the story is interrupting the philosophical remarks or vice

versa; he has to stop and think all too frequently during the course of reading this book and in a way which takes him away from the tale rather than enriching it. I would like to see this author apply his descriptive finesse to a less complicated and contrived concept of a world so that one could enjoy his imaginative flights of fancy more thoroughly.

Speaking of flights of fancy, Leonora Carrington's zany fantasy *The Hearing Trumpet* should not be missed. This humorous, surrealist *tour de force* spends no time convincing or philosophizing; its pace is so swift, its main character — an old woman facing life in a very eccentric "home for senile old ladies" — is so skillfully developed that the reader is utterly willing to be taken along and taken in by her incredible narrative of extremely unlikely events. Here is an example of a wild, witty, conversational fantasy which makes no bones about using the extraordinary to great advantage. Even a winking nun portrayed in a painting on the wall becomes an unforgettable character among a melting-pot of elderly women who approach their agedness with humor, cockeyed but winning pride, and adventurousness.

— Rosemary Herbert

SCIENCE

Hal
Clement

Science for Fiction #7

I have always admitted that the *science* part of science fiction means more to me than the fiction, but even I have to grant that there is a difference between a science article and a story. I personally get a lot more fun out of working up the possible permutations of a scientific theme than out of the somewhat trivial job of making characters perform appropriate actions — yes, I know it shows. My reason, if there is any beyond a purely subjective bias, is that the science is really all that determines what *can* happen.

I don't suppose I can prove this to anyone who really doesn't want to believe it, but let's have a try. I'll work out a few of the variations on a common science fiction theme which does need some kind of science — or pseudo-science — to support it. I am claiming that each of these variations offers a chance at an entire family — a large one — of stories, whose members vary among themselves a lot more than human characters and their behavior ever seem to in either the real or the fictional worlds. I won't do the stories

themselves, or more than vaguely suggest them; I trust you to carry out that part of the game, and only ask you to be honest in your final conclusions.

The theme is invisibility. I don't claim to know all the ways this has been "accomplished" in stories even during the last century, and if I could there wouldn't be room for them, but we can cover a reasonable variety.

First and simplest — in concept, at least — is the Wells technique of total transparency. As long as you're not being rained or snowed on, or trying to swim, anything which will make your body transmit light at the same speed as air does will certainly make you invisible. What else it will do to your body is another matter, which the careful author will consider at some length and which should provide its own family of yarns.

It will also make you blind, of course. If the light rays pass through your retina without interacting with it — without being intercepted by it — you will certainly see nothing. If you develop a special treatment for rods and cones to let them stop just a little light, so that they are *barely* visible against the sky or a white wall, it won't be enough — it may even be worse. Your retina is being illuminated from all directions, and is *not* having an image focussed on it. You really need an opaque eyeball or analogous structure, and if it's

opaque I very much fear it will be visible. Arthur Leo Zagat's underground monsters in "Beyond the Spectrum" (*Astounding*, August '34) were apparently totally transparent by nature; they solved the seeing problem by transplanting eyes from human prisoners into their own heads — a technique, one suspects, as complex as artificial invisibility. One can play around with devices using the ultra-violet or infra-red parts of the spectrum, but the equipment will also have to be perfectly transparent to visible light, and the human retinas somehow sensitized to these other frequencies. Naturally, I am avoiding the word *impossible*, but there will be a strong tendency to use up the whole story with the technical problems met and solved in developing the technique. I would probably enjoy such a story, but I doubt that many editors more recent than the mid-1930's would have bought it.

Sending the light *around* instead of *through* the invisible one offers him a better chance to see, though I doubt that the technique will be much simpler (except that nothing has to be done *to* the character's body, and side effects are therefore less of a problem). This was the general method used by Burroughs' invisibility paint (*A Fighting Man of Mars*), by John Campbell in *Cloak of Aesir*, and by the invisibility field of Jack Williamson's *Cometeers*. In the latter

two cases ultra-violet light went through the "cloak" unaffected, and was transformed to visible light inside to allow the user of the device to see out. Burroughs was less convincing; Tan Hadron soaked a fine cloth in the paint, so that he could see out through the weave. A pseudo-scientific double standard, I'm afraid. One can see a sort of arms race between users of the invisibility device and their opponents; the latter find what frequencies are being used by the unseen ones for vision, and build sensors for these waves; the others change their vision band — trivial, but you get the idea and can no doubt improve on it.

The fourth-dimension story probably shouldn't come up here; it's a whole field in itself, and invisibility is merely incidental to the other factors which crop up. Its complications extend all the way to such rather fundamental items as the first and second laws of thermodynamics; and open-minded as I like to believe I am, I get a little uneasy when these are threatened.

There are less physical, and perhaps more practical, techniques which might be employed. Psychology, I am told, is also a science and has a legitimate place in science fiction. In Campbell's *Cloak of Aesir*, mentioned above, one of the human characters had developed his own entirely psychological invisibility cloak. He had, by virtue of much study, learned

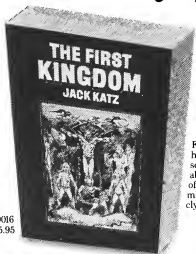
how to dress and act so as to achieve a complete lack of noticeability. He did not walk *noiselessly*, which is quite noticeable in a heavy man, but with just the right amount of noise. His face was nondescript, his voice devoid of special qualities. It seemed quite practical to me, though I would expect that specific cultural situations might be needed to get the best out of the technique. Also, it is hard to see how he could accomplish anything useful under the shelter of such a cloak; just about any action leading to meaningful results would, I can't help thinking, attract attention.

Still, the basic idea certainly has something; consider the near-absolute invisibility of the "No Smoking" sign in our own culture. (Sorry, I couldn't resist that one.)

Science fiction is not the only field to use this technique, I must admit; Chesterton's *Invisible Man*, who committed a murder if I recall correctly, was the postman. People swore no one had come to the house...

A sort of borderline between physics and psychology embraces the art of camouflage. I haven't seen it used often in science fiction, but it *has* been used. In the March 1934 *Amazing* Victor Endersby's "A Job of Blending" killed off some nasty protection racketeers when the poor little tailor with no money arranged to pay off in trade. The drivers who ran over the

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baddies insisted they never saw them until too late.

A little deeper into psychology is hypnotism, which is a real phenomenon in spite of the garnish of unbelievability which the sensationalists have scattered around it. It is, I gather, possible — though very difficult — to hypnotize a person so that he will fail to see some particular object or class of objects. The technique is difficult and time-consuming, I understand, and it is hard to see how it could be used to work out a bank robbery; but I would expect most *Unearth* readers to take this as a challenge. (For a story, let me hastily add.) Maybe only one, or a few, key characters need be influenced, if the background is set up right.

If one goes slightly over the edge and grants the existence of telepathy, then hypnotism becomes more practical, of course. The best example in my memory is from John Campbell's "The Brain Pirates" (*Thrilling Wonder Stories*, October 1938). This was the last of his five-story Penton and Blake series; his characters had reached the satellite of Planet Ten, and of course found it inhabited by an intelligent species.

There were also semi-intelligent pests, the *krull*, who were telepathic and equipped with side-of-the-head eyes which gave them 360° vision. Hence (not my word) they could broadcast a telepathic image of the part of the landscape they

should have been blocking, to anyone nearby, and render themselves unseeable. The creatures thought it funny to sit on the front bumper of a car and render it invisible, too. You'll have to dig up the story and read it for yourself to learn why this was funny rather than catastrophic. At least, the *krull* himself had no seeing problems through his "invisibility cloak."

Finally, on the edge of hard science fiction, is the technique of going back to the beginning and setting up a brand-new set of laws. We don't have to, but we may as well call these the laws of magic, as Robert Heinlein did in *Magic Incorporated*, de Camp and Pratt in their Harold Shea series, and Randall Garrett in the Lord D'Arcy stories. Here, in common decency, one must give the rules early enough in the story and in detail enough to let the reader have a fair chance of solving the problem ahead of the hero — this, of course, is why *laws* have to be assumed at all, and why we can fairly call these stories science fiction.

Garrett furnishes the best example of invisibility of the above three. He makes it a result of the Tarnhelm Effect, which permits the casting of spells which prevent a person from looking directly at the object to be hidden. In *Too Many Magicians* — a beautiful takeoff on the late Rex Stout's *Too Many Cooks* — Garrett points out

some of the practical difficulties of the method. The protected object could still be seen in a mirror, since one could look at the latter. A spell could also be cast on the mirror, and all the other reflecting surfaces which might be around, but this would put so much restraint on the wandering eye that even a non-magician (only certain people were born with the Talent to practice magic) would start to wonder.

This, let me point out rather parenthetically, is an utter necessity in a "power" based story. The power *must* have weaknesses; there must be ways in which it can be overcome, whether it is being used for good or evil. Otherwise there is no real problem or difficulty, and therefore no story.

All right, be honest. Did you see more story possibilities in the scientific problems inherent in the various methods of invisibility we've gone through here, or do you still think it's more effective just to take the invisibility for granted and concentrate on its use by some character to satisfy his or her desires for money, power, or libido gratification?

Yes, I know it's a loaded question. Go ahead and unload it.

And then think a while.

And then answer it honestly. I still have my opinion. ●

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Introduction

They say you must write a million words of copy before you have the skill to do something saleable. No doubt this is a rule with many exceptions, but probably it has applied to me. At least, throughout my teens I scrawled story after story in longhand, until boxes of such stuff were lying around. Yet my ambition was not to become a writer, except perhaps as a sideline. I had my eyes set first on nuclear physics, later on astrophysics, and went to college with that in mind.

This was at the University of Minnesota, its Institute of Technology, which in those days was intent upon living up to its name. In four years, three three-credit quarters of English were required, of which two were engineering English, how to write reports and such; in the last, we read a few novels. Scientific German was also mandatory. As electives, I took Spanish and some courses in the philosophy of science. The latter consisted partly of symbolic logic, partly of the hardest-boiled logical positivism. So much for my formal liberal education.

It doesn't seem to me that too many opportunities were lost.

FIRST
SALE

POUL
ANDERSON

Learning goes on all our lives, or ought to, and it's easier to study a subject like history alone than it is a subject like mathematics. Besides reading, travel, and so forth, I have been fortunate in having many friends whose expertise and enthusiasm in various fields have spurred me to acquire a little information for myself.

One of them was, and happily still is, Francis Neil Waldrop. We'd attended the seventh grade together, the year that my family spent in Maryland. Afterward we corresponded. Both being hobbyists about writing — he less compulsively than me, but then, he wasn't isolated on a farm — we used to exchange our efforts for comments. It did not occur to either of us to get into fandom. Though avid readers of the science fiction magazines, we scarcely knew that anything organized existed.

Eventually he came to Minnesota for a couple of years, since it offered an excellent pre-medical curriculum, and we renewed acquaintance on a face-to-face basis. This was not long after World War Two. The atomic bomb was on everybody's mind. Few people questioned the dogma that a nuclear war would bring at least an eclipse of civilization, if not an extinction. More ominous possibilities involved genetic damage. Suppose, said Neil in conversation, sufficient radioactive material got

scattered around the globe that mutations occurred in *every* living organism.

I saw a story in that, went home, and wrote it. Neil said it was good enough that I ought to submit it. Hitherto I'd only mailed out a few items over the years, none to *Astounding* — I lacked the nerve — and all rejected. Well, there had been an entry in the "Probability Zero" department, which won me a whole five dollars, but that didn't count. This time, encouraged by Neil, I borrowed a typewriter, put the manuscript in proper form, and sent it in. Because the basic idea was his, I gave him half the by-line; however, the actual writing was entirely mine.

No one could have been more surprised than me when a note came from John Campbell saying that he'd like to buy the story. Incidentally, let me scotch a rumor. A while back, I heard a lady writer complain that, on her first sale to the same market, she had to sign a statement that it was her own work. She felt this was because of her sex. Not true. I got the same form, as did every newcomer. It was merely Street & Smith policy.

(Also incidentally: Progress in genetics has long since destroyed the assumptions underlying "Tomorrow's Children." We know now that events could not work out as described. Such is the

occupational hazard of the science fiction writer.)

Having an idea for a sequel, I wrote that and it sold too. Then followed about a year in which everything I submitted bounced, for valid reasons as I now see. At last I began to acquire the proper mind-set, or whatever it was, and began selling quite regularly to Campbell, occasionally elsewhere. Meanwhile I'd taken my bachelor's degree and left college. No funds remained for further study; the University was full-up with graduate assistants; a recession was going on and jobs were hard to find. For personal reasons, I was reluctant at the time to leave Minneapolis, which narrowed my field still further. Being then unmarried and never having had an opportunity to develop expensive tastes, I though I'd support myself by writing while looking around for "real" work.

Somehow that while stretched on and on. It was too much fun being my own boss, precarious though that often became. Gradually it grew evident that I'd drifted into writing as my career. Except for two or three temporary jobs when times got hard — the last of them more than twenty years ago — this has always been how I've earned my daily beer.

With that realization came another. If it was to be my business, I would be wise to study the craft of it. Mostly, I'd just been dashing

things off. In consequence, I no longer find anything of mine readable that was done in those early days. (Apparently others do, since a number of stories from that period have been reprinted, often more than once. However, nobody else is close enough to the texts to see all the flaws. In some cases, I've rewritten them to repair the worst amateurisms.) Not till the later 1950's was I really in control of my material, and then it wasn't consistent. That took a few years more. Of course, I have continued learning since then, and hope I still am. A person who intended from the first to be a writer would doubtless become conscious much sooner of what he or she was doing and why. The skill, as well as the freshness, shown by many of today's newcomers seems to bear this out.

Yet you can get cripplingly rule-bound, as easily by Symbolism and Significance as by old-fashioned pulp formulas. I've seen more than one promising talent stifled by majoring in "creative composition." In fact, my advice to young would-be writers includes the urgent recommendation that they study anything else ... never, for God's sake, that! This is not to put down the Clarion approach, which is something else again and has an enviable record of successful graduates. Still, even it is probably not suitable for everybody.

In general, when people inter-

Poul Anderson

ested in writing professionally approach me for suggestions, my reply is three-fold, all parts of equal importance. First, *write*. Practical experience is the absolute essential for master of any trade, including this. Keep writing. Follow your own star but, at the same time, observe how the great writers got their effects and think hard about what you have observed. As a corollary, pointed out by others: *Submit* your work. If you have any confidence in it whatsoever — and if you don't, it belongs in the fireplace — then send it in. It's remarkable how many folk are afraid to take that perfectly harmless, inexpensive, and necessary step.

Second, *learn*. You can't write unless you have something to write about, and the fiction of others is thin material. Get as wide a variety of personal experience as you possibly can. Try your hand at different things, travel, argue, meditate, carouse, fall in love, daydream, fight for a cause, contemplate landscapes, encourage people to talk and listen to them. This doesn't mean you should be a wild adventurer, if that isn't your natural bent. Jane Austen lived a quiet life; the point is that she lived it in full awareness. Since none of us can do everything anyway, read a hell of a lot. You'll find no substitute for the printed word. At best, media such as movies and television are supplementary, and pretty limited supplements at that.

Third, *care*. Occasionally every professional has to write something which doesn't interest him. It may not be for money; he may, for example, be redeeming an indiscreet promise. Nevertheless, though the result should be competently done, it won't be his best, and it represents a certain waste of life. Not only does the real pleasure lie in working on what appeals to you most; you'll be in a state of mind which evokes all you have to offer. That may not be the very greatest experience a human being can have, but it certainly ranks near the top.

Tomorrow's Children

*On the world's loom
Weave the Norns doom,
Nor may they guide it nor change.
— Wagner, Siegfried*

Ten miles up, it hardly showed. Earth was a cloudy green and brown blur, the vast vault of the stratosphere reaching changelessly out to spatial infinities, and beyond the pulsing engine there was silence and serenity no man could ever touch. Looking down, Hugh Drummond could see the Mississippi gleaming like a drawn sword, and its slow curve matched the contours shown on his map. The hills, the sea, the sun and wind and rain, they didn't change. Not in less than a million slow-striding years, and human efforts flickered too briefly in the unending night for that.

Farther down, though, and especially where cities had been — The lone man in the solitary stratojet swore softly, bitterly, and his knuckles whitened on the controls. He was a big man, his gaunt rangy form sprawling awkwardly in the tiny pressure cabin, and he wasn't quite forty. But his dark hair was

streaked with gray, in the shabby flying suit his shoulders stooped, and his long homely face was drawn into haggard lines. His eyes were black-rimmed and sunken with weariness, dark and dreadful in their intensity. He's seen too much, survived too much, until he began to look like most other people of the world. *Heir of the ages*, he thought dully.

Mechanically, he went through the motions of following his course. Natural landmarks were still there, and he had powerful binoculars to help him. But he didn't use them much. They showed too many broad shallow craters, their vitreous smoothness throwing back sunlight in the flat blank glitter of a snake's eye, the ground about them a churned and blasted desolation. And there were the worse regions of — deadness. Twisted dead trees, blowing sand, tumbled skeletons, perhaps at night a baleful blue glow of fluorescence. The bombs had been nightmares, riding in on wings of fire and horror to shake the planet with the death blows of cities. But the radioactive dust was worse than any nightmare.

He passed over villages, even small towns. Some of them were deserted, the blowing colloidal dust, or plague, or economic breakdown making them untenable. Others still seemed to be living a feeble half-life. Especially in the Midwest, there was a pathetic struggle to return to an agricultural system, but the insects and blights —

Drummond shrugged. After nearly two years of this, over the scarred and maimed planet, he should be used to it. The United States had been lucky. Europe, now —

Der Untergang des Abendlandes, he thought grayly. *Spengler foresaw the collapse of a topheavy civilization. He didn't foresee atomic bombs, blight bombs — the bombs, the senseless inanimate bombs flying like monster insects over the shivering world. So he didn't guess the extent of the collapse.*

Deliberately he pushed the thoughts out of his conscious mind. He didn't want to dwell on them. He'd lived with them two years, and that was two eternities too long. And anyway, he was nearly home now.

The capital of the United States was below him, and he sent the stratojet slanting down in a long thunderous dive toward the mountains. Not much of a capital, the little town huddled in a valley of the Cascades, but the waters of the

Potomac had filled the grave of Washington. Strictly speaking, there was no capital. The officers of the government were scattered over the country, keeping in precarious touch by plane and radio, but Taylor, Oregon, came as close to being the nerve center as any other place.

He gave the signal again on his transmitter, knowing with a faint spine-crawling sensation of the rocket batteries trained on him from the green of those mountains. When one plane could carry the end of a city, all planes were under suspicion. Not that anyone outside was supposed to know that that innocuous little town was important. But you never could tell. The war wasn't officially over. It might never be, with sheer personal survival overriding the urgency of treaties.

A light-beam transmitter gave him a cautious: "O.K. Can you land in the street?"

It was a narrow, dusty track between two wooden rows of house, but Drummond was a good pilot and this was a good jet. "Yeah," he said. His voice had grown unused to speech.

He cut speed in a spiral descent until he was gliding with only the faintest whisper of wind across his ship. Touching wheels to the street, he slammed on the brake and bounced to a halt.

Silence struck at him like a physical blow. The engine stilled, the

sun beating down from a brassy blue sky on the drabness of rude "temporary" houses, the total-seeming desertion beneath the impassive mountains — Home! Hugh Drummond laughed, a short harsh bark with nothing of humor in it, and swung open the cockpit canopy.

There were actually quite a few people, he saw, peering from doorways and side streets. They looked fairly well fed and dressed, many in uniform, they seemed to have purpose and hope. But this, of course, was the capital of the United States of America, the world's most fortunate country.

"Get out — quick!"

The peremptory voice roused Drummond from the introspection into which those lonely months had driven him. He looked down at a gang of men in mechanics' outfits, led by a harassed-looking man in captain's uniform. "Oh — of course," he said slowly. "You want to hide the plane. And, naturally, a regular landing field would give you away."

"Hurry, get out, you infernal idiot! Anyone, *anyone* might come over and see —"

"They wouldn't get unnoticed by an efficient detection system, and you still have that," said Drummond, sliding his booted legs over the cockpit edge. "And anyway, there won't be any more raids. The war's over."

"Wish I could believe that, but

who are you to say? Get a move on!"

The grease monkeys hustled the plane down the street. With an odd feeling of loneliness, Drummond watched it go. After all, it had been his home for — how long?

The machine was stopped before a false house whose whole front was swung aside. A concrete ramp led downward, and Drummond could see a cavernous immensity below. Light within it gleamed off silvery rows of aircraft.

"Pretty neat," he admitted. "Not that it matters any more. Probably it never did. Most of the hell came over on robot rockets. Oh, well." He fished his pipe from his jacket. Colonel's insignia glittered briefly as the garment flipped back.

"Oh ... sorry, sir!" exclaimed the captain. "I didn't know —"

"S O.K. I've gotten out of the habit of wearing a regular uniform. A lot of places I've been, an American wouldn't be very popular." Drummond stuffed tobacco into his briar, scowling. He hated to think how often he'd had to use the Colt at his hip, or even the machine guns in his plane, to save himself. He inhaled smoke gratefully. It seemed to drown out some of the bitter taste.

"General Robinson said to bring you to him when you arrived, sir," said the captain. "This way, please."

They went down the street, their boots scuffing up little acrid clouds of dust. Drummond looked sharply about him. He'd left very shortly after the two-month Ragnarok which had tapered off when the organization of both sides broke down too far to keep on making and sending the bombs, and maintaining order with famine and disease starting their ghastly ride over the homeland. At that time, the United States was a cityless, anarchic chaos, and he'd had only the briefest of radio exchanges since then, whenever he could get at a long-range set still in working order. They'd made remarkable progress meanwhile. How much, he didn't know, but the mere existence of something like a capital was sufficient proof.

Robinson — His lined face twisted into a frown. He didn't know the man. He'd been expecting to be received by the President, who had sent him and some others out. Unless the others had — No, he was the only one who had been in eastern Europe and western Asia. He was sure of that.

Two sentries guarded the entrance to what was obviously a converted general store. But there were no more stores. There was nothing to put in them. Drummond entered the cool dimness of an antechamber. The clatter of a typewriter, the Wac operating it — He gaped and blinked. That was — impossible! Typewriters, secre-

taries — hadn't they gone out with the whole world, two years ago? If the Dark Ages had returned to Earth, it didn't seem — *right* — that there should still be typewriters. It didn't fit, didn't —

He grew aware that the captain had opened the inner door for him. As he stepped in, he grew aware how tired he was. His arm weighed a ton as he saluted the man behind the desk.

"At ease, at ease," Robinson's voice was genial. Despite the five stars on his shoulders, he wore no tie or coat, and his round face was smiling. Still, he looked tough and competent underneath. To run things nowadays, he'd have to be.

"Sit down, Colonel Drummond." Robinson gestured to a chair near his and the aviator collapsed into it, shivering. His haunted eyes traversed the office. It was almost well enough outfitted to be a prewar place.

Prewar! A word like a sword, cutting across history with a brutality of murder, hazing everything in the past until it was a vague golden glow through drifting, red-shot black clouds. And — only two years. *Only two years!* Surely sanity was meaningless in a world of such nightmare inversions. Why, he could barely remember Barbara and the kids. Their faces were blotted out in a tide of other visages — starved faces, dead faces, human faces become beast-formed with want and pain and eating throttled

hate. His grief was lost in the agony of a world, and in some ways he had become a machine himself.

"You look plenty tired," said Robinson.

"Yeah . . . yes, sir —"

"Skip the formality. I don't go for it. We'll be working pretty close together, can't take time to be diplomatic."

"Uh-huh. I came over the North Pole, you know. Haven't slept since — Rough time. But, if I may ask, you —" Drummond hesitated.

"I? I suppose I'm President. Ex officio, pro tem, or something. Here, you need a drink." Robinson got bottle and glasses from a drawer. The liquor gurgled out in a pungent stream. "Prewar Scotch. Till it gives out I'm laying off this modern hooch. *Gambai*."

The fiery, smoky brew jolted Drummond to wakefulness. Its glow was pleasant in his empty stomach. He heard Robinson's voice with a surrealistic sharpness:

"Yes, I'm at the head now. My predecessors made the mistake of sticking together, and of traveling a good deal in trying to pull the country back into shape. So I think the sickness got the President, and I know it got several others. Of course, there was no means of holding an election. The armed forces had almost the only organization left, so we had to run things. Berger was in charge, but

he shot himself when he learned he'd breathed radiodust. Then the command fell to me. I've been lucky."

"I see." It didn't make much difference. A few dozen more deaths weren't much, when over half the world was gone. "Do you expect to — continue lucky?" A brutally blunt question, maybe, but words weren't bombs.

"I do." Robinson was firm about that. "We've learned by experience, learned a lot. We've scattered the army, broken it into small outposts at key points throughout the country. For quite a while, we stopped travel altogether except for absolute emergencies, and then with elaborate precautions. That smothered the epidemics. The microorganisms were bred to work in crowded areas, you know. They were almost immune to known medical techniques, but without hosts and carriers they died. I guess natural bacteria ate up most of them. We still take care in traveling, but we're fairly safe now."

"Did any of the others come back? There were a lot like me, sent out to see what really had happened to the world."

"One did, from South America. Their situation is similar to ours, though they lacked our tight organization and have gone further toward anarchy. Nobody else returned but you."

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It wasn't surprising. In fact, it was a cause for astonishment that anyone had come back. Drummond had volunteered after the bomb erasing St. Louis had taken his family, not expecting to survive and not caring much whether he did. Maybe that was why he had.

"You can take your time in writing a detailed report," said Robinson, "but in general, how are things over there?"

Drummond shrugged. "The war's over. Burned out. Europe has gone back to savagery. They were caught between America and Asia, and the bombs came both ways. Not many survivors, and they're starving animals. Russia, from what I saw, has managed something like you've done here, though they're worse off than we. Naturally, I couldn't find out much there. I didn't get to India or China, but in Russia I heard rumors — No, the world's gone too far into disintegration to carry on war."

"Then we can come out in the open," said Robinson softly. "We can really start rebuilding. I don't think there'll ever be another war, Drummond. I think the memory of this one will be carved too deeply on the race for us ever to forget."

"Can you shrug it off that easily?"

"No, no, of course not. Our culture hasn't lost its continuity, but it's had a terrific setback. We'll never wholly get over it. But —

we're on our way up again."

The general rose, glancing at his watch. "Six o'clock. Come on, Drummond, let's get home."

"Home?"

"Yes, you'll stay with me. Man, you look like the original zombie. You'll need a month or more of sleeping between clean sheets, of home cooking and home atmosphere. My wife will be glad to have you; we see almost no new faces. And as long as we'll work together, I'd like to keep you handy. The shortage of competent men is terrific."

They went down the street, an aide following. Drummond was again conscious of the weariness aching in every bone and fiber of him. A home — after two years of ghost towns, of shattered chimneys above blood-dappled snow, of flimsy lean-tos housing starvation and death.

"Your plane will be mighty useful, too," said Robinson. "Those atomic-powered craft are scarcer than hens' teeth used to be." He chuckled hollowly, as at a rather grim joke. "Got you through close to two years of flying without needing fuel. Any other trouble?"

"Some, but there were enough spare parts." No need to tell of those frantic hours and days of slaving, of desperate improvisation with hunger and plague stalking him who stayed overlong. He'd had his troubles getting food, too,

despite the plentiful supplies he'd started out with. He'd fought for scraps in the winters, beaten off howling maniacs who would have killed him for a bird he'd shot or a dead horse he'd scavenged. He hated that plundering, and would not have cared personally if they'd managed to destroy him. But he had a mission, and the mission was all he'd had left as a focal point for his life, so he'd clung to it with fanatic intensity.

And now the job was over, and he realized he couldn't rest. He didn't dare. Rest would give him time to remember. Maybe he could find surcease in the gigantic work of reconstruction. Maybe.

"Here we are," said Robinson.

Drummond blinked in new amazement. There was a car, camouflaged under brush, with a military chauffeur — *a car!* And in pretty fair shape, too.

"We've got a few oil wells going again, and a small patched-up refinery," explained the general. "It furnishes enough gas and oil for what traffic we have."

They got in the rear seat. The aide sat in front, a rifle ready. The car started down a mountain road.

"Where to?" asked Drummond a little dazedly.

Robinson smiled. "Personally," he said, "I'm almost the only lucky man on Earth. We had a summer cottage on Lake Taylor, a few miles from here. My wife was there when the war came, and

stayed, and nobody came along till I brought the head offices here with me. Now I've got a home all to myself."

"Yeah. Yeah, you're lucky," said Drummond. He looked out the window, not seeing the sun-spattered woods. Presently he asked, his voice a little harsh: "How is the country really doing now?"

"For a while it was rough. Damn rough. When the cities went, our transportation, communication, and distribution systems broke down. In fact, our whole economy disintegrated, though not all at once. Then there was the dust and the plagues. People fled, and there was open fighting when overcrowded safe places refused to take in any more refugees. Police went with the cities, and the army couldn't do much patrolling. We were busy fighting the enemy troops that'd flown over the Pole to invade. We still haven't gotten them all. Bands are roaming the country, hungry and desperate outlaws, and there are plenty of Americans who turned to banditry when everything else failed. That's why we have this guard, though so far none have come this way.

"The insect and blight weapons just about wiped out our crops, and that winter everybody starved. We checked the pests with modern methods, though it was touch and go for a while, and next year got some food. Of course, with no dis-

tribution as yet, we failed to save a lot of people. And farming is still a tough proposition. We won't really have the bugs licked for a long time. If we had a research center as well equipped as those which produced the things — But we're gaining. We're gaining."

"Distribution —" Drummond rubbed his chin. "How about railroads? Horse-drawn vehicles?"

"We have some railroads going, but the enemy was as careful to dust most of ours as we were to dust theirs. As for horses, they were nearly all eaten that first winter. I know personally of only a dozen. They're on my place; I'm trying to breed enough to be of use, but" — Robinson smiled wryly — "by the time we've raised that many, the factories should have been going quite a spell."

"And so now —?"

"We're over the worst. Except for outlaws, we have the population fairly well controlled. The civilized people are fairly well fed, with some kind of housing. We have machine shops, small factories, and the like going, enough to keep our transportation and other mechanism 'level.' Presently we'll be able to expand these, begin actually increasing what we have. In another five years or so, I guess, we'll be integrated enough to drop martial law and hold a general election. A big job ahead, but a good one."

The car halted to let a cow lum-

ber over the road, a calf trotting at her heels. She was gaunt and shaggy, and skittered nervously from the vehicle into the brush.

"Wild," explained Robinson. "Most of the real wild life was killed off for food in the last two years, but a lot of farm animals escaped when their owners died or fled, and have run free ever since. They —" He noticed Drummond's fixed gaze. The pilot was looking at the calf. Its legs were half the normal length.

"Mutant," said the general. "You find a lot such animals. Radiation from bombed or dusted areas. There are even a lot of human abnormal births." He scowled, worry clouding his eyes. "In fact, that's just about our worst problem. It —"

The car came out of the woods onto the shore of a small lake. It was a peaceful scene, the quiet waters like molten gold in the slanting sunlight, trees ringing the circumference and all about them the mountains. Under one huge pine stood a cottage, a woman on the porch.

It was like one summer with Barbara — Drummond cursed under his breath and followed Robinson toward the little building. It wasn't, it wasn't, it could never be. Not ever again. There were soldiers guarding this place from chance marauders, and — There was an odd-looking flower at his foot. A

daisy, but huge and red and irregularly formed.

A squirrel chattered from a tree. Drummond saw that its face was so blunt as to be almost human.

Then he was on the porch, and Robinson was introducing him to "my wife Elaine." She was a nice-looking young woman with eyes that were sympathetic on Drummond's exhausted face. The aviator tried not to notice that she was pregnant.

He was led inside, and reveled in a hot bath. Afterward there was supper, but he was numb with sleep by then, and hardly noticed it when Robinson put him to bed.

Reaction set in, and for a week or so Drummond went about in a haze, not much good to himself or anyone else. But it was surprising what plenty of food and sleep could do, and one evening Robinson came home to find him scribbling on sheets of paper.

"Arranging my notes and so on," he explained. "I'll write out the complete report in a month, I guess."

"Good. But no hurry." Robinson settled tiredly into an armchair. "The rest of the world will keep. I'd rather you'd just work at this off and on, and join my staff for your main job."

"O.K. Only what'll I do?"

"Everything. Specialization is gone; too few surviving specialists and equipment. I think your chief

task will be to head the census bureau."

"Eh?"

Robinson grinned lopsidedly. "You'll *be* the census bureau, except for what few assistants I can spare you." He leaned forward, said earnestly: "And it's one of the most important jobs there is. You'll do for this country what you did for central Eurasia, only in much greater detail. Drummond, we have to *know*."

He took a map from a desk drawer and spread it out. "Look, here's the United States. I've marked regions known to be uninhabitable in red." His fingers traced out the ugly splotches. "Too many of 'em, and doubtless there are others we haven't found yet. Now, the blue X's are army posts." They were sparsely scattered over the land, near the centers of population groupings. "Not enough of those. It's all we can do to control the more or less well-off, orderly people. Bandits, enemy troops, homeless refugees — they're still running wild, skulking in the backwoods and barrens, and raiding whenever they can. And they spread the plague. We won't really have it licked till everybody's settled down, and that'd be hard to enforce. Drummond, we don't even have enough soldiers to start a feudal system for protection. The plague spread like a prairie fire in those concentrations of men.

"We have to *know*. We have to know how many people survived — half the population, a third, a quarter, whatever it is. We have to know how many people survived — they're fixed for supplies, so we can start up an equitable distribution system. We have to find all the small-town shops and labs and libraries still standing, and rescue their priceless contents before looters or the weather beat us to it. We have to locate doctors and engineers and other professional men, and put them to work rebuilding. We have to find the outlaws and round them up. We — I could go on forever. Once we have all that information, we can set up a master plan for redistributing population, agriculture, industry, and the rest most efficiently, for getting the country back under civil authority and police, for opening regular transportation and communication channels — for getting the nation back on its feet."

"I see," nodded Drummond. "Hitherto, just surviving and hanging on to what was left has taken precedence. Now you're in a position to start expanding, *if* you know where and how much to expand."

"Exactly." Robinson rolled a cigarette, grimacing. "Not much tobacco left. What I have is perfectly foul. Lord, that war was crazy!"

"All wars are," said Drummond

dispassionately, "but technology advanced to the point of giving us a knife to cut our throats with. Before that, we were just beating our heads against the wall. Robinson, we can't go back to the old ways. We've *got* to start on a new track — a track of sanity."

"Yes. And that brings up —" The other man looked toward the kitchen door. They could hear the cheerful rattle of dishes there, and smell mouth-watering cooking odors. He lowered his voice. "I might as well tell you this now, but don't let Elaine know. She ... shouldn't be worried. Drummond, did you see our horses?"

"The other day, yes. The colts —"

"Uh-huh. There've been five colts born of eleven mares in the last year. Two of them were so deformed they died in a week, another in a few months. One of the two left has cloven hoofs and almost no teeth. The last one looks normal — so far. One out of eleven, Drummond."

"Were those horses near a radioactive area?"

"They must have been. They were rounded up wherever found and brought here. The stallion was caught near the site of Portland, I know. But if he were the only one with mutated genes, it would hardly show in the first generation, would it? I understand nearly all mutations are Mendelian recessives. Even if there were one domi-

nant, it would show in all the colts, but none of these looked alike."

"Hm-m-m — I don't know much about genetics, but I do know hard radiation, or rather the secondary charged particles it produces, will cause mutation. Only mutants are rare, and tend to fall into certain patterns —"

"*Were* rare!" Suddenly Robinson was grim, something coldly frightened in his eyes. "Haven't you noticed the animals and plants? They're fewer than formerly, and ... well, I've not kept count, but at least half those seen or killed have something wrong, internally or externally."

Drummond drew heavily on his pipe. He needed something to hang onto, in a new storm of insanity. Very quietly, he said:

"In my college biology course, they told me the vast majority of mutations are unfavorable. More ways of not doing something than of doing it. Radiation might sterilize an animal, or might produce several degrees of genetic change. You could have a mutation so violently lethal the possessor never gets born, or soon dies. You could have all kinds of more or less handicapping factors, or just random changes not making much difference one way or the other. Or in a few cases you might get something actually favorable, but you couldn't really say the possessor is a true member of the species. And

favorable mutations themselves usually involve a price in the partial or total loss of some other function."

"Right." Robinson nodded heavily. "One of your jobs on the census will be to try and locate any and all who know genetics, and send them here. But your real task, which only you and I and a couple of others must know about, the job overriding all considerations, will be to find the human mutants."

Drummond's throat was dry. "There've been a lot of them?" he whispered.

"Yes. But we don't know how many or where. We only know about those people who live near an army post, or have some other fairly regular intercourse with us, and they're only a few thousand all told. Among them, the birth rate has gone down to about half the prewar ratio. And over half the births they do have are abnormal."

"*Over half* —"

"Yeah. Of course, the violently different ones soon die, or are put in an institution we've set up in the Alleghenies. But what can we do with viable forms, if their parents still love them? A kid with deformed or missing or abortive organs, twisted internal structure, a tail, or something even worse ... well, *it'll* have a tough time in life, but it can generally survive. And perpetuate itself —"

"And a normal-looking one

might have some unnoticeable quirk, or a characteristic that won't show up for years. Or even a normal one might be carrying recessives, and pass them on — God!" The exclamation was half blasphemy, half prayer. "But how'd it happen? People weren't all near atom-hit areas."

"Maybe not, though a lot of survivors escaped from the outskirts. But there was that first year, with everybody on the move. One could pass near enough to a blasted region to be affected, without knowing it. And that damnable radiodust, blowing on the wind. It's got a long half-life. It'll be active for decades. Then, as in any collapsing culture, promiscuity was common. Still is. Oh, it'd spread itself, all right."

"I still don't see why it spread itself so much. Even here —"

"Well, I don't know why it shows up here. I suppose a lot of the local flora and fauna came in from elsewhere. This place is safe. The nearest dusted region is three hundred miles off, with mountains between. There must be many such islands of comparatively normal conditions. We have to find them too. But elsewhere —"

"Soup's on," announced Elaine, and went from the kitchen to the dining room with a loaded tray.

The men rose. Grayly, Drummond looked at Robinson and said tonelessly: "O.K. I'll get your

information for you. We'll map mutation areas and safe areas, we'll check on our population and resources, we'll eventually get all the facts you want. But — what are you going to do then?"

"I wish I knew," said Robinson haggardly. "I wish I knew."

Winter lay heavily on the north, a vast gray sky seeming frozen solid over the rolling white plains. The last three winters had come early and stayed long. Dust, colloidal dust of the bombs, suspended in the atmosphere and cutting down the solar constant by a deadly percent or two. There had even been a few earthquakes, set off in geologically unstable parts of the world by bombs planted right. Half California had been ruined when a sabotage bomb started the San Andreas Fault on a major slip. And that kicked up still more dust.

Fimbulwinter, thought Drummond bleakly. *The doom of the prophecy. But no, we're surviving. Though maybe not as men —*

Most people had gone south, and there overcrowding had made starvation and disease and internecine struggle the normal aspects of life. Those who'd stuck it out up here, and had luck with their pest-ridden crops, were better off.

Drummond's jet slid above the cratered black ruin of the Twin Cities. There was still enough radioactivity to melt the snow, and

the pit was like a skull's empty eye socket. The man sighed, but he was becoming calloused to the sight of death. There was so much of it. Only the struggling agony of life mattered any more.

He strained through the sinister twilight, swooping low over the unending fields. Burned-out hulks of farmhouses, bones of ghost towns, sere deadness of dusted land — but he'd heard travelers speak of a fairly powerful community up near the Canadian border, and it was up to him to find it.

A lot of things had been up to him in the last six months. He'd had to work out a means of search, and organize his few, overworked assistants into an efficient staff, and go out on the long hunt.

They hadn't covered the country. That was impossible. Their few planes had gone to areas chosen more or less at random, trying to get a cross section of conditions. They'd penetrated wildernesses of hill and plain and forest, establishing contact with scattered, still demoralized out-dwellers. On the whole, it was more laborious than anything else. Most were pathetically glad to see any symbol of law and order and the paradisaical-seeming "old days." Now and then there was danger and trouble, when they encountered wary or sullen or outright hostile groups suspicious of a government they associated with disaster, and once there had even been a

pitched battle with roving outlaws. But the work had gone ahead, and now the preliminaries were about over.

Preliminaries — It was a bigger job to find out exactly how matters stood than the entire country was capable of undertaking right now. But Drummond had enough facts for reliable extrapolation. He and his staff had collected most of the essential data and begun correlating it. By questioning, by observation, by seeking and finding, by any means that came to hand they'd filled their notebooks. And in the sketchy outlines of a Chinese drawing, and with the same stark realism, the truth was there.

Just this one more place, and I'll go home, thought Drummond for the — thousandth? — time. His brain was getting into a rut, treading the same terrible circle and finding no way out. *Robinson won't like what I tell him, but there it is.* And darkly, slowly: *Barbara, maybe it was best you and the kids went as you did. Quickly, cleanly, not even knowing it. This isn't much of a world. It'll never be our world again.*

He saw the place he sought, a huddle of buildings near the frozen shores of the Lake of the Woods, and his jet murmured toward the white ground. The stories he'd heard of this town weren't overly encouraging, but he supposed he'd get out all right. The others had his data anyway, so it didn't matter.

By the time he'd landed in the clearing just outside the village, using the jet's skis, most of the inhabitants were there waiting. In the gathering dusk they were a ragged and wild-looking bunch, clumsily dressed in whatever scraps of cloth and leather they had. The bearded, hard-eyed men were armed with clubs and knives and a few guns. As Drummond got out, he was careful to keep his hands away from his own automatics.

"Hello," he said. "I'm friendly."

"Y' better be," growled the big leader. "Who are you, where from, an' why?"

"First," lied Drummond smoothly, "I want to tell you I have another man with a plane who knows where I am. If I'm not back in a certain time, he'll come with bombs. But we don't intend any harm or interference. This is just a sort of social call. I'm Hugh Drummond of the United States Army."

They digested that slowly. Clearly, they weren't friendly to the government, but they stood in too much awe of aircraft and armament to be openly hostile. The leader spat. "How long you staying?"

"Just overnight, if you'll put me up. I'll pay for it." He held up a small pouch. "Tobacco."

Their eyes gleamed, and the leader said, "You'll stay with me. Come on."

Drummond gave him the bribe and went with the group. He didn't like to spend such priceless luxuries thus freely, but the job was more important. And the boss seemed thawed a little by the fragrant brown flakes. He was sniffing them greedily.

"Been smoking bark an' grass," he confided. "Terrible."

"Worse than that," agreed Drummond. He turned up his jacket collar and shivered. The wind starting to blow was bitterly cold.

"Just what y' here for?" demanded someone else.

"Well, just to see how things stand. We've got the government started again, and are patching things up. But we have to know where folks are, what they need, and so on."

"Don't want nothing t' do with the gov'ment," muttered a woman. "They brung all this on us."

"Oh, come now. We didn't ask to be attacked." Mentally, Drummond crossed his fingers. He neither knew nor cared who was to blame. Both sides, letting mutual fear and friction mount to hysteria — In fact, he wasn't sure the United States hadn't sent out the first rockets, on orders of some panicky or aggressive officials. Nobody was alive who admitted knowing.

"It's the judgment o' God, for the sins o' our leaders," persisted

the woman. "The plague, the fire-death, all that, ain't it foretold in the Bible? Ain't we living in the last days o' the world?"

"Maybe." Drummond was glad to stop before a long low cabin. Religious argument was touchy at best, and with a lot of people nowadays it was dynamite.

They entered the rudely furnished but fairly comfortable structure. A good many crowded in with them. For all their suspicion, they were curious, and an outsider in an aircraft was a blue-moon event these days.

Drummond's eyes flickered unobtrusively about the room, noticing details. Three women — that meant a return to concubinage. Only to be expected in a day of few men and strong-arm rule. Ornaments and utensils, tools and weapons of good quality — yes, that confirmed the stories. This wasn't exactly a bandit town, but it had waylaid travelers and raided other places when times were hard, and built up a sort of dominance of the surrounding country. That, too, was common.

There was a dog on the floor nursing a litter. Only three pups, and one of those was bald, one lacked ears, and one had more toes than it should. Among the wide-eyed children present, there were several two years old or less, and with almost no obvious exceptions, they were also different.

Drummond sighed heavily and sat down. In a way, this clinched it. He'd known for a long time, and finding mutation here, as far as any place from atomic destruction, was about the last evidence he needed.

He had to get on friendly terms, or he wouldn't find out much about things like population, food production, and whatever else there was to know. Forcing a smile to stiff lips, he took a flask from his jacket. "Prewar rye," he said. "Who wants a nip?"

"Do we!" The answer barked out in a dozen voices and words. The flask circulated, men pawing and cursing and grabbing to get at it. *Their homebrew must be pretty bad*, thought Drummond wryly.

The chief shouted an order, and one of his women got busy at the primitive stove. "Rustle you a mess o' chow," he said heartily. "An' my name's Sam Buckman."

"Pleased to meet you, Sam." Drummond squeezed the hairy paw hard. He had to show he wasn't a weakling, a conniving city slicker.

"What's it like outside?" asked someone presently. "We ain't heard for so long —"

"You haven't missed much," said Drummond between bites. The food was pretty good. Briefly, he sketched conditions. "You're better off than most," he finished.

"Yeah. Mebbe so." Sam Buckman scratched his tangled beard.

"What I'd give f'r a razor blade —! It ain't easy, though. The first year we weren't no better off 'n anyone else. Me, I'm a farmer, I kept some ears o' corn an' a little wheat an' barley in my pockets all that winter, even though I was starving. A bunch o' hungry refugees plundered my place, but I got away an' drifted up here. Next year I took an empty farm here an' started over."

Drummond doubted that it had been abandoned, but said nothing. Sheer survival outweighed a lot of considerations.

"Others came an' settled here," said the leader reminiscently. "We farm together. We have to; one man couldn't live by hisself, not with the bugs an' blight, an' the crops sproutin' into all new kinds, an' the outlaws aroun'. Not many up here, though we did beat off some enemy troops last winter." He glowed with pride at that, but Drummond wasn't particularly impressed. A handful of freezing starveling conscripts, lost and bewildered in a foreign enemy's land, with no hope of ever getting home, weren't formidable.

"Things getting better, though," said Buckman. "We're heading up." He scowled blackly, and a palpable chill crept into the room. "If 'twern't for the births —"

"Yes — the births. The new babies. Even the stock an' plants." It was an old man speaking, his eyes glazed with near madness.

"It's the mark o' the beast. Satan is loose in the world —"

"Shut up!" Huge and bristling with wrath, Buckman launched himself out of his seat and grabbed the oldster by his scrawny throat. "Shut up 'r I'll bash y'r lying head in. Ain't no son o' mine being marked by the devil."

"Or mine —" "Or mine —" The rumble of voices ran about the cabin, sullen and afraid.

"It's God's jedgment, I tell you!" The woman was shrilling again. "The end o' the world is near. Prepare f'r the second coming —"

"An' you shut up too, Mag Schmidt," snarled Buckman. He stood bent over, gnarled arms swinging loose, hands flexing, little eyes darting red and wild about the room. "Shut y'r trap an' keep it shut. I'm still boss here, an' if you don't like it you can get out. I still don't think that gunny-looking brat o' y'rs fell in the lake by accident."

The woman shrank back, lips tight. The room filled with a crackling silence. One of the babies began to cry. It had two heads.

Slowly and heavily, Buckman turned to Drummond, who sat immobile against the wall. "You see?" he asked dully. "You see how it is? Maybe it is the curse o' God. Maybe the world is ending. I dunno. I just know there's few enough babies, an' most o' them deformed. Will it go on? Will all

our kids be monsters? Should we ... kill these an' hope we get some human babies? What is it? What to do?

Drummond rose. He felt a weight as of centuries on his shoulders, the weariness, blank and absolute, of having seen that smoldering panic and heard that desperate appeal too often, too often.

"Don't kill them," he said. "That's the worst kind of murder, and anyway it'd do no good at all. It comes from the bombs, and you can't stop it. You'll go right on having such children, so you might as well get used to it."

By atomic-powered stratojet it wasn't far from Minnesota to Oregon, and Drummond landed in Taylor about noon the next day. This time there was no hurry to get his machine under cover, and up on the mountain was a raw scar of earth where a new airfield was slowly being built. Men were getting over their terror of the sky. They had another fear to face now, and it was one from which there was no hiding.

Drummond walked slowly down the icy main street to the central office. It was numbingly cold, a still, relentless intensity of frost eating through clothes and flesh and bone. It wasn't much better inside. Heating systems were still poor improvisations.

"You're back!" Robinson met him in the antechamber, suddenly

galvanized with eagerness. He had grown thin and nervous, looking ten years older, but impatience blazed from him. "How is it? How is it?"

Drummond held up a bulky notebook. "All here," he said grimly. "All the facts we'll need. Not formally correlated yet, but the picture is simple enough."

Robinson laid an arm on his shoulder and steered him into the office. He felt the general's hand shaking, but he'd sat down and had a drink before business came up again.

"You've done a good job," said the leader warmly. "When the country's organized again, I'll see you get a medal for this. Your men in the other planes aren't in yet."

"No, they'll be gathering data for a long time. The job won't be finished for years. I've only got a general outline here, but it's enough. It's enough." Drummond's eyes were haunted again.

Robinson felt cold at meeting that too-steady gaze. He whispered shakily: "Is it — bad?"

"The worst. Physically, the country's recovering. But biologically, we've reached a crossroads and taken the wrong fork."

"What do you mean? *What do you mean?*"

Drummond let him have it then, straight and hard as a bayonet thrust. "The birth rate's a little over half the pre-war," he said, "and about seventy-five per cent

of all births are mutant, of which possibly two-thirds are viable and presumably fertile. Of course, that doesn't include late-maturing characteristics, or those undetectable by naked-eye observation, or the mutated recessive genes that must be carried by a lot of otherwise normal zygotes. And it's everywhere. There are no safe places."

"I see," said Robinson after a long time. He nodded, like a man struck a stunning blow and not yet fully aware of it. "I see. The reason —"

"Is obvious."

"Yes. People going through radioactive areas —"

"Why, no. That would only account for a few. But —"

"No matter. The fact's there, and that's enough. We have to decide what to do about it."

"And soon." Drummond's jaw set. "It's wrecking our culture. We at least preserved our historical continuity, but even that's going now. People are going crazy as birth after birth is monstrous. Fear of the unknown, striking at minds still stunned by the war and its immediate aftermath. Frustration of parenthood, perhaps the most basic instinct there is. It's leading to infanticide, desertion, despair, a cancer at the root of society. We've got to act."

"How? How?" Robinson stared numbly at his hands.

"I don't know. You're the

leader. Maybe an educational campaign, though that hardly seems practicable. Maybe an acceleration of your program for re-integrating the country. Maybe — I don't know."

Drummond stuffed tobacco into his pipe. He was near the end of what he had, but would rather take a few good smokes than a lot of niggling puffs. "Of course," he said thoughtfully, "it's probably not the end of things. We won't know for a generation or more, but I rather imagine the mutants can grow into society. They'd better, for they'll outnumber the humans. The thing is, if we just let matters drift there's no telling where they'll go. The situation is unprecedented. We may end up in a culture of specialized variations, which would be very bad from an evolutionary standpoint. There may be fighting between mutant types, or with humans. Interbreeding may produce worse freaks, particularly when accumulated recessives start showing up. Robinson, if we want any say at all in what's going to happen in the next few centuries, we have to act quickly. Otherwise it'll snowball out of all control."

"Yes. Yes, we'll have to act fast. And hard." Robinson straightened in his chair. Decision firmed his countenance, but his eyes were staring. "We're mobilized," he said. "We have the men and the

weapons and the organization. They won't be able to resist."

The ashy cold of Drummond's emotions stirred, but it was with a horrible wrenching of fear. "What are you getting at?" he snapped.

"Racial death. All mutants and their parents to be sterilized whenever and wherever detected."

"You're crazy!" Drummond sprang from his chair, grabbed Robinson's shoulders across the desk, and shook him. "You ... why, it's impossible! You'll bring revolt, civil war, final collapse!"

"Not if we go about it right." There were little beads of sweat studding the general's forehead. "I don't like it any better than you, but it's got to be done or the human race is finished. Normal births a minority —" He surged to his feet, gasping. "I've thought a long time about this. Your facts only confirmed my suspicions. This tears it. Can't you see? Evolution has to proceed slowly. Life wasn't meant for such a storm of change. Unless we can save the true human stock, it'll be absorbed and differentiation will continue till humanity is a collection of freaks, probably intersterile. Or ... there must be a lot of lethal recessives. In a large population, they can accumulate unnoticed till nearly everybody has them, and then start emerging all at once. That'd wipe us out. It's happened before, in rats and other species. If we eliminate mutant stock now, we

can still save the race. It won't be cruel. We have sterilization techniques which are quick and painless, not upsetting the endocrine balance. But it's got to be done." His voice rose to a raw scream, broke. "It's got to be done!"

Drummond slapped him, hard. He drew a shuddering breath, sat down, and began to cry, and somehow that was the most horrible sight of all. "You're crazy," said the aviator. "You've gone nuts with brooding alone on this the last six months, without knowing or being able to act. You've lost all perspective."

"We can't use violence. In the first place, it would break our tottering, cracked culture irreparably, into a mad-dog finish fight. We'd not even win it. We're outnumbered, and we couldn't hold down a continent, eventually a planet. And remember what we said once, about abandoning the old savage way of settling things, that never brings a real settlement at all? We'd throw away a lesson our noses were rubbed in not three years ago. We'd return to the beast — to ultimate extinction."

"And anyway," he went on very quietly, "it wouldn't do a bit of good. Mutants would still be born. The poison is everywhere. Normal parents will give birth to mutants, somewhere along the line. We just have to accept that fact, and live with it. The *new* human race will have to."

"I'm sorry." Robinson raised his face from his hands. It was a ghastly visage, gone white and old, but there was calm on it. "I — blew my top. You're right. I've been thinking of this, worrying and wondering, living and breathing it, lying awake nights, and when I finally sleep I dream of it. I ... yes, I see your point. And you're right."

"It's O.K. You've been under a terrific strain. Three years with never a rest, and the responsibility for a nation, and now this — Sure, everybody's entitled to be a little crazy. We'll work out a solution, somehow."

"Yes, of course." Robinson poured out two stiff drinks and gulped his. He paced restlessly, and his tremendous ability came back in waves of strength and confidence. "Let me see — Eugenics, of course. If we work hard, we'll have the nation tightly organized inside of ten years. Then ... well, I don't suppose we can keep the mutants from interbreeding, but certainly we can pass laws to protect humans and encourage their propagation. Since radical mutations would probably be intersterile anyway, and most mutants handicapped one way or another, a few generations should see humans completely dominant again."

Drummond scowled. He was worried. It wasn't like Robinson to be unreasonable. Somehow, the man had acquired a mental blind

spot where this most ultimate of human problems was concerned. He said slowly, "That won't work either. First, it'd be hard to impose and enforce. Second, we'd be repeating the old *Herrenvolk* notion. Mutants are inferior, mutants must be kept in their place — to enforce that, especially on a majority, you'd need a full-fledged totalitarian state. Third, that wouldn't work either, for the rest of the world, with almost no exceptions, is under no such control and we'll be in no position to take over that control for a long time — generations. Before then, mutants will dominate everywhere over there, and if the resent the way we treat their kind here, we'd better run for cover."

"You assume a lot. How do you know those hundreds or thousands of diverse types will work together? They're less like each other than like humans, even. They could be played off against each other."

"Maybe. But *that* would be going back onto the old road of treachery and violence, the road to Hell. Conversely, if every not-quite-human is called a 'mutant,' like a separate class, he'll think he is, and act accordingly against the lumped-together 'humans.' No, the only way to sanity — to *survival* — is to abandon class prejudice and race hate altogether, and work as individuals. We're all ... well, Earthlings, and subclassifica-

tion is deadly. We all have to live together, and might as well make the best of it."

"Yeah yeah, that's right too."

"Anyway, I repeat that all such attempts would be useless. All Earth is infected with mutation. It will be for a long time. The purest human stock will still produce mutants."

"Y-yes, that's true. Our best bet seems to be to find all such stock and withdraw it into the few safe areas left. It'll mean a small human population, but a *human* one."

"I tell you, that's impossible," clipped Drummond. "There is no safe place. Not one."

Robinson stopped pacing and looked at him as at a physical antagonist. "That so?" he almost growled. "Why?"

Drummond told him, adding incredulously, "Surely you knew that. Your physicists must have measured the amount of it. Your doctors, your engineers, that geneticist I dug up for you. You obviously got a lot of this biological information you've been slinging at me from him. They *must* all have told you the same thing."

Robinson shook his head stubbornly. "It can't be. It's not reasonable. The concentration wouldn't be great enough."

"Why, you poor fool, you need only look around you. The plants, the animals — Haven't there been

any births in Taylor?"

"No. This is still a man's town, though women are trickling in and several babies are on the way —" Robinson's face was suddenly twisted with desperation. "Elaine's is due any time now. She's in the hospital here. Don't you see, our other kid died of the plague. This one's all we have. We want him to grow up in a world free of want and fear, a world of peace and sanity where he can play and laugh and become a man, not a beast starving in a cave. You and I are on our way out. We're the old generation, the one that wrecked the world. It's up to us to build it again, and then retire from it to let our children have it. The future's theirs. We've got to make it ready for them."

Sudden insight held Drummond motionless for long seconds. Understanding came, and pity, and an odd gentleness that changed his sunken bony face. "Yes," he murmured, "yes, I see. That's why you're working with all that's in you to build a normal, healthy world. That's why you nearly went crazy when this threat appeared. That . . . that's why you can't, just can't comprehend —"

He took the other man's arm and guided him toward the door. "Come on," he said. "Let's go see how your wife's making out. Maybe we can get her some flowers on the way."

The silent cold bit at them as they went down the street. Snow crackled underfoot. It was already grimy with town smoke and dust, but overhead the sky was incredibly clean and blue. Breath smoked whitely from their mouths and nostrils. The sound of men at work rebuilding drifted faintly between the bulking mountains.

"We couldn't emigrate to another planet, could we?" asked Robinson, and answered himself: "No, we lack the organization and resources to settle them right now. We'll have to make out on Earth. A few safe spots — there *must* be others besides this one — to house the true humans till the mutation period is over. Yes, we can do it."

"There are no safe places," insisted Drummond. "Even if there were, the mutants would still outnumber us. Does your geneticist have any idea how this'll come out, biologically speaking?"

"He doesn't know. His specialty is still largely unknown. He can make an intelligent guess, and that's all."

"Yeah. Anyway, our problem is to learn to live with the mutants, to accept anyone as — Earthling — no matter how he looks, to quit thinking anything was ever settled by violence or connivance, to build a culture of individual sanity. Funny," mused Drummond, "how the impractical virtues, tolerance and sympathy and generosity, have become the fundamental necessities

of simple survival. I guess it was always true, but it took the death of half the world and the end of a biological era to make us see that simple little fact. The job's terrific. We've got half a million years of brutality and greed, superstition and prejudice, to lick in a few generations. If we fail, mankind is done. But we've got to try."

They found some flowers, potted in a house, and Robinson bought them with the last of his tobacco. By the time he reached the hospital, he was sweating. The sweat froze on his face as he walked.

The hospital was the town's biggest building, and fairly well equipped. A nurse met them as they entered.

"I was just going to send for you, General Robinson," she said. "The baby's on the way."

"How ... is she?"

"Fine, so far. Just wait here, please."

Drummond sank into a chair and with haggard eyes watched Robinson's jerky pacing. *The poor guy. Why is it expectant fathers are supposed to be so funny? It's like laughing at a man on the rack. I know, Barbara, I know.*

"They have some anaesthetics," muttered the general. "They ... Elaine never was very strong."

"She'll be all right." *It's afterward that worries me.*

"Yeah — Yeah — How long, though, how long?"

"Depends. Take it easy." With a wrench, Drummond made a sacrifice to a man he liked. He filled his pipe and handed it over. "Here, you need a smoke."

"Thanks." Robinson puffed raggedly.

The slow minutes passed, and Drummond wondered vaguely what he'd do when — it — happened. It didn't have to happen. But the chances were all against such an easy solution. He was no psychologist. Best just to let things happen as they would.

The waiting broke at last. A doctor came out, seeming an inscrutable high priest in his white garments. Robinson stood before him, motionless.

"You're a brave man," said the doctor. His face, as he removed the mask, was stern and set. "You'll need your courage."

"She —" It was hardly a human sound, that croak.

"Your wife is doing well. But the baby —"

A nurse brought out the little wailing form. It was a boy. But his limbs were rubbery tentacles terminating in boneless digits.

Robinson looked, and something went out of him as he stood there. When he turned, his face was dead.

"You're lucky," said Drummond, and meant it. He'd seen too many other mutants. "After all, if he can use those hands he'll get along all right. He'll even have an

advantage in certain types of work. It isn't a deformity, really. If there's nothing else, you've got a good kid."

"If! You can't tell with mutants."

"I know. But you've got guts, you and Elaine. You'll see this through, together." Briefly, Drummond felt an utter personal desolation. He went on, perhaps to cover that emptiness:

"I see why you didn't understand the problem. You *wouldn't*. It was a psychological block, suppressing a fact you didn't dare face. That boy is really the center of your life. You couldn't think the truth about him, so your subconscious just refused to let you think rationally on that subject at all.

"Now you know. Now you realize there's no safe place, not on all the planet. The tremendous incidence of mutant births in the first generation could have told you that alone. Most such new characteristics are recessive, which means both parents have to have it for it to show in the zygote. But genetic changes are random, except for a tendency to fall into roughly similar patterns. Four-leaved clovers, for instance. Think how vast the total number of such changes must be, to produce so many corresponding changes in a couple of years. Think how many, *many* recessives there must be, existing only in gene patterns till their mates show up. We'll just have to

take our chances of something really deadly accumulating. We'd never know till too late."

"The dust —"

"Yeah. The radiodust. It's colloidal, and uncountable other radiocolloids were formed when the bombs went off, and ordinary dirt gets into unstable isotopic forms near the craters. And there are radiogases too, probably. The poison is all over the world by now, spread by wind and air currents. Colloids can be suspended indefinitely in the atmosphere.

"The concentration isn't too high for life, though a physicist told me he'd measured it as being very near the safe limit and there'll probably be a lot of cancer. But it's everywhere. Every breath we draw, every crumb we eat and drop we drink, every clod we walk on, the dust is there. It's in the stratosphere, clear on down to the surface, probably a good distance below. We could only escape by sealing ourselves in air-conditioned vaults and wearing spacesuits whenever we got out, and under present conditions that's impossible.

"Mutations were rare before, because a charged particle has to get pretty close to a gene and be moving fast before its electromagnetic effect causes physico-chemical changes, and then that particular chromosome has to enter into reproduction. Now the charged particles, and the gamma

rays producing still more, are everywhere. Even at the comparatively low concentration, the odds favor a given organism having so many cells changed that at least one will give rise to a mutant. There's even a good chance of like recessives meeting in the first generation, as we've seen. Nobody's safe, no place is free."

"The geneticist thinks some true humans will continue."

"A few, probably. After all, the radioactivity isn't too concentrated, and it's burning itself out. But it'll take fifty or a hundred years for the process to drop to insignificance, and by then the pure stock will be way in the minority. And there's still be all those unmatched recessives, waiting to show up."

"You were right. We should never have created science. It brought the twilight of the race."

"I never said that. The race brought its own destruction, through misuse of science. Our culture was scientific anyway, in all except its psychological basis. It's up to us to take that last and hardest step. If we do, the race may yet survive."

Drummond gave Robinson a push toward the inner door. "You're exhausted, beat up, ready to quit. Go on in and see Elaine. Give her my regards. Then take a long rest before going back to
(cont. on next page)

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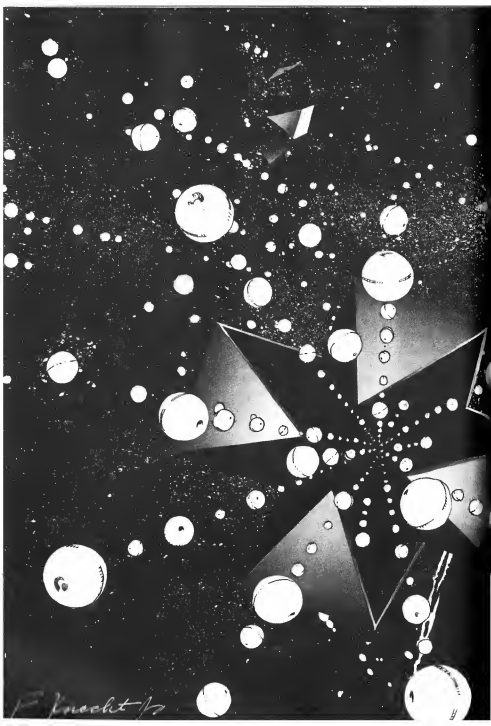
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work. I still think you've got a good kid."

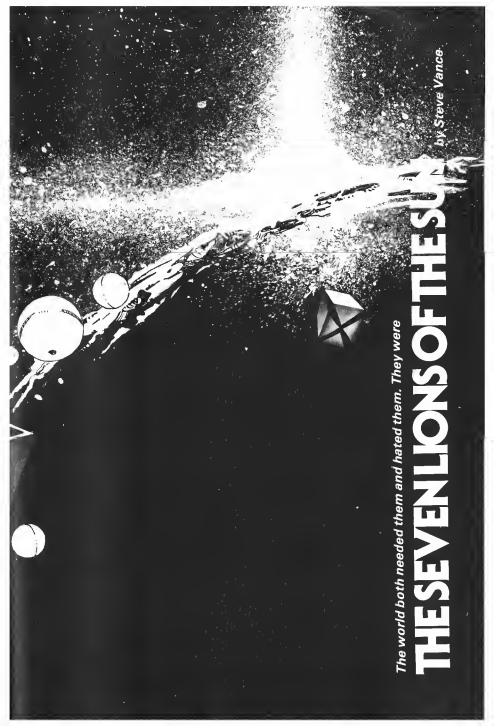
Mechanically, the *de facto* Presi-

dent of the United States left the room. Hugh Drummond stared after him a moment, then went out into the street. ●

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F. Knecht / s



The world both needed them and hated them. They were

THE SEVEN LIONS OF THE SUN

by Steve Vance

Lord, it was beautiful that day. May had waltzed sedately in days earlier, bringing along mild temperatures and a clear sky like something from a Rockwell painting, and sliding silently through it in a wingless, bullet-shaped sprit jet was as close to astral projection as I'd ever come. Sky rapture is what experienced pilots call it, and I turned up the volume on my stereo to nudge away its warmly soporific invitation.

The sprits, built with gyro magnetic engines and palm-cup controls stolen from the first extra-terrestrial vehicle ever shot down on Earth, are as easily maneuvered as bicycles, and their very simplicity attracts blissful lethargy.

"Ten minutes out of Culver City," Major Adam Parker Balincopf's perpetually sneering voice informed our twenty-two member squadron over the standard radio frequency. "Any of you jerks showing problems?"

Very little can go wrong with your average sprit, so the only reply to Balincopf's demand was from a nervous-throated rookie who wanted to know if the vector blue on his control panel was *supposed* to be flashing that way. After reminding him that the blue meant he hadn't depolarized his hull after his last flight — something every kinetic pilot is informed of during the first day at the academy — Balincopf proceeded to give the poor slob the

worst verbal dressing down I had ever been privileged to hear while in the military.

We were bound for the Culver-Gundlach nuclear reactor, which had officially begun operations that morning and was sure to draw BB's like flies. The BB's were so named because they were big, gold-colored, metal air- and spacecraft that were as round and featureless as the little balls of lead shot that kids used to shoot from air rifles. They had burst spore-like from the three huge, black space vehicles which had taken up orbit around the moon just after widespread adoption of nuclear power use in the early Nineties.

"Bank right when we hit the Culver limits," Balincopf ordered from his lead sprit. "We'll do some eights and flips at a thousand meters and give the yokels a show."

"And probably knock the local traffic 'copter out of the sky," Lem Graham, my front man, added.

"I'll see you on the ground, turkey," Balincopf replied, his tone carrying an implied threat. He considers the last word a perk of rank.

No one had yet discovered where the big motherships had come from, other than somewhere out-System, and all of Earth's attempts to communicate with the monoliths had been fruitless. The ten-kilometer-long cubes had simply

ignored all light, radio, and concussion impulses directed toward them and continued orbiting our single natural satellite, while all of our moderately safe nuclear reactors were chugging merrily away and reintroducing to civilization the concept of gluttonous energy use. Then, one day in December of '93, approximately six thousand of the house-sized globes were expelled in swarms toward the Earth.

Contact at last, claimed the more optimistic observers of the BB's arrival. But the glistening balls remained as uncommunicative as their enigmatic parents, and eagerly sought out the highest-producing power plants. Having located these, the craft calmly extended several radiant vortices across the top of the complexes and, in some incomprehensible fashion, began to drain off the majority of the energy produced therein.

When the aircraft carrying greetings or warnings approached the hovering objects, they were summarily blasted into flaming scraps by some sort of refined electron discharge from the BB's equators. This remarkable demonstration of aggressive capacity shocked everyone. The gods weren't returning from outer space.

Naturally, most of the world's governments held back their retaliation in hopes that these initial attacks were accidents or misinterpretations by the globes.

But the vehicles continued their steady siphoning of Earth's energy, apparently ferrying full charges back to their base ships a quarter of a million miles away. Hostile action was eventually taken against them by several nations in order to halt the draining and assure the mysterious visitors that, advanced technology or not, they couldn't shove around the locals on their home turf. We might as well have tried to counter-attack wolves with sheep.

"That'll give the slobs something to talk about," Balincopf laughed over my radio after we had zipped above Culver in an eight-wing split V formation. "For once you jerks performed like a squad and not a collection of greenbutt goofballs. Even you rookies."

This was the first time our five rookie pilots had ever experienced non-practice formation flying.

In response to some perverse impulse, I dropped out of the V, cut my power, and made a rolling, gas jet dive at Culver City's tallest structure, a life insurance building. I pulled out of the dive in plenty of time, of course, but I was sure that I invited plenty of heart attacks in the offices below.

"Sinclair, you bastard!" screamed Balincopf. "What in the hell was that?"

I rejoined the flight. "Just stretching my legs a bit, A.P.," I radioed back.

"I'm going to take you apart, showboat, and that's a promise."

"Smart move, Russ," Dick Endicott, my tail man, observed on an intership frequency off the standard.

I didn't answer; it had been a pretty stupid thing to do. I wasn't worried about any military action being taken against me — since we kinetic soldiers are too rare and valuable to be busted for every little infraction, we get away with just about anything — but Balinkopf's brand of discipline is from the old knuckle-to-jawbone school. I'm no slouch in a quarrel, but, hell, the joker's got over forty kilos on me. And I'm no masochist.

I owed my position as a kinetic soldier to the continued belligerence of the first BB's, who had indiscriminately slaughtered peace envoys, reactor crews, and any other individuals unfortunate enough to be in the area during their frequent power raids. Over the frantic objections of the Pacifist Party (largest political faction in the U.S. since the mid-Eighties), the government ordered a military strike on the next fleet of UFO's that attacked a reactor. Ground fire was ineffective against an enemy who could maneuver in any direction, turn at ninety degrees without slowing, and fire retaliatory beams from any point along its equatorial seam.

Air power was only slightly

more effective. Their guns could not dent the gold metal of the BB hulls, and their rockets were consistently avoided if fired from beyond a hundred meters. Laser or electron bolts and their derivatives were practically useless against the reflective surfaces.

Finally, in 1994, one globe was brought down before the general Earth offensive was routed when three air-to-air missiles quite accidentally hit simultaneously in the same area of hull. The wrecked machine was discovered to have been remote-controlled (not surprisingly), and gave Earth science its first look at an engine so advanced that it made our jets look like steam kettles by comparison.

For the next eighteen months, the raiders continued their lightning strikes against little effective resistance, and the major political parties fought among themselves. Then the first sprit jets made their debut during a globe attack on a New York reactor outside of Syracuse. The UFO's had massacred a large portion of the complex's employees and about half of the ground crew of an Army installation, while twenty-five Pacifist Party members marched no more than five hundred meters from the battle demanding that hostilities against the invaders be stopped. With dramatic suddenness, the six slim, short sprits flashed among the darting globes and began turning, accelerating, diving, and

hovering as easily as their opponents.

Made of similar alloys and possessing equivalent gyro magnetic drive engines and stasis compartments to protect their human pilots from the terrible stresses of inertia, these sprits proved their superiority over conventional aircraft by destroying three globes and driving off the rest. The only obvious deficiency the Earth vehicles exhibited was in armament, and the rockets again proved less effective than the electron rays employed by the BB's. Two sprits were shot down.

"Culver field," Balincopf radioed, interrupting my reverie. "We'll set down in the invert after clearing with the tower. You rookies stay behind me until I give you the word. Nelson, Marns, peel off and set your patterns."

We landed without incident at the military field outside the nuclear reactor complex, and Balincopf even managed to coax the rookies down safely. I stretched for a few moments in the whipping winds that raced across the wide, flat field — sprit cockpits are comfortable, but small — and then walked to the rear of the craft to unload my gear. I was short-stopped in this by a wide-eyed j.g. and two privates.

"We'll handle that, Lieutenant," the junior officer said with awe spilling out of his voice. Awe is a common reaction to a

first meeting with a kinetic soldier, "a living weapon." "I'll show you to the auditorium, sir; it's this way."

I pulled off my flight helmet. "So?"

"Well, uh, Colonel Glassner has invited the 941st to a welcome reception in the public relations building. He's very interested in your branch of the military."

That explained the welcome for the 941st squadron, since we could hardly have been a happy addition to any military camp on the basis of our extracurricular records. Among kinetic divisions, we are known as the wildest, or, as the official label read, "attitude and disciplinary problems who have been transferred from other squadrons."

"The Colonel is very punctual, sir," the j.g. continued. "Major Balincopf has already begun to assemble the rest of your squad."

"Okay," I sighed. "Lead on."

The p.r. building was a big, square architect's nightmare. I stumbled in dead last, right by Balincopf, who was stationed by the doorway into the main auditorium.

"You make one snide crack and I'll smear you over the walls, Sinclair," he whispered.

"Me?" I asked innocently. But I sat quietly beside Nancy "Pug" Nelson and waited for the over-stuffed military machine to begin his standard speech.

"Gentlemen and lady," Glassner started, the last part a smiling concession to Pug, the only woman in our squad, "this is indeed a proud day for Culver City. Not only have we the privilege of unveiling the nation's newest nuclear power complex in today's ceremony, but we can also welcome the distinguished members of the Army 941st Squadron to our installation."

"Distinguished," I snickered, nudging Pug in the ribs. The members of the 941st, myself included, had been kicked down more ranks than any other six squads in the service. Balincopf had even risen as high as lieutenant colonel before finding a major general in his wife's bedroom and punching the man out.

Glassner wasn't finished yet. "As you know, we here at Rodgers Allforces Base are deservedly proud of our association with the residents of Culver City. In the past three years, we have had no more serious confrontations on the base than the peaceful marches held by the Pacifist Party, which comprises over forty per cent of all local voting preferences. Incidents in the city itself have all been minor affairs with no serious charges being brought against any service personnel." The Colonel was an expansive, white-haired man, and he paused to smile beatifically upon us.

"We choose to cooperate with

the townspeople, rather than fight with them, so you newer arrivals can take a page from our guidebook in your future dealings with the area civilians. As long as we all pull together for the common good, I'm certain that your association with the people in and around Rodgers will be a long and smooth one."

Pug leaned over to me and whispered, "In other words, he doesn't want any of you Pliocene cretins taking the quiet little village apart, as you have been known to do in the past."

"You wound me," I whispered back. "Where did we acquire this dreadful reputation?"

"Now, Major Balincopf," Glassner was saying, "if you would give our audience a small demonstration of your amazing abilities, I'm sure it would be enormously appreciated."

The only time I can recall seeing Adam Balincopf smile was when we were drunk in a house of ill repute in Salt Lake City, and when he marched up to the Colonel, his dour face showed no signs of repeating the performance. Though the good major didn't take anything from higher-ranking officers that he wouldn't accept from subordinates, he didn't go out of his way to antagonize colonels and their ilk. Besides, everybody in the squadron knew that the Ape enjoyed showing off his kinetic prowess at the drop of a lip.

"I'm honored, Colonel Glassner," he said, not looking at it. "As you all know, individuals with psychokinetic abilities have been actively recruited by the Armed Forces since Major Michael Kendall discovered that the talent could be used for more important purposes than influencing the roll of dice. Under supervised drug treatment, psychokinesis can be developed into a powerful, controlled offensive weapon that requires no external stimulus and can be utilized at any given moment."

By way of illustration, Balincopf pointed his right hand, palm down, at an empty four-liter paint can that had been suspended over the speaker's platform by a meter-long string. A thin, brilliant red streak leaped from his fingertips and vaporized the can in less than an eyeblink. The assembly was not at attention, and most of them gasped or shouted at the pyrotechnical display.

"And he called you a showboat," Pug said.

"You will notice that the scarlet beam of intensified mental energy totally destroyed the target without disturbing the string that held it, other than to eliminate the weight on its end," Balincopf went on. "The energy was emitted from my right hand simply because investigators discovered that concentration and accuracy with the luminous force is increased when a par-

ticular point of dispatch is selected. The most obvious point is the hand.

"This power is so much under the control of the wielder that he is able to cut, punch, nudge, or obliterate practically any substance at his desire. Also, the beam isn't affected by refraction or reflection, and it proceeds no further than the chosen point of impact, thus not endangering any object other than the specific target."

He failed to mention that anything accidentally wandering into the path of the bolt before it reaches its destination is blown to hell.

"The ability has proven effective at ranges up to six hundred meters. Since it is practically instantaneously transmitted, it has become far more useful than conventional firepower against such fleet targets as the Extraterrestrial Flying Objects that regularly assault the world's nuclear power stations. 'Kinetic performers' have been sought to fly the spirit aircraft which defend these areas against the unprovoked and savage attacks. With both hands in firing gloves, which emit his kinetic discharges through the nose of the spirit, a soldier can literally destroy the automated assault vehicles employed by our yet-unnamed enemy. That is exactly what we of the 941st squadron intend to do if the situation ever arises here at Culver."

An impromptu cheer arose from the gathering, and Balincopf's concrete frown almost cracked. Some of the assembled 941st clowns yelled obscenities in tones similar to hurrahs, but no one appeared to notice.

"Major Balincopf," said Glassner happily (inspired by the spiel, no doubt), "am I correct in believing that each kinetic soldier ... emits a beam of a different color?"

"Well, sir, they're not as varied as snowflakes, but every soldier creates his own shade, yes. Allow me to demonstrate. Fernandez, Parker, front and center!"

Fel Fernandez and Jessie Parker, two of our more compliant members and rookies both, snapped sharply to their feet and marched up to the speaker's platform. Balincopf positioned himself next to them and ordered, "Target three o'clock, range twenty meters, on three; one, two, three!"

Almost in synchronization, the trio extended their right hands, fists clenched, and beamed a small rainbow over our heads toward the rear of the room to the accompaniment of a high, but not painful, whistle. Admiring applause rippled and then swept across the assembly, as the three performers sustained their red, yellow, and green rays for a full six seconds, not a bad trick; kinetic emissions are generally sharp impulse releases, and three or so seconds is about

my limit for uninterrupted firing. But I have shot blasts every quarter second for a half hour in battle conditions.

Balincopf, the stone-faced terror, basked in the applause like a sunflower at noon. He didn't even break when Graham, Endicott, Nelson, and I thumbed him in sequence.

As expected, the arrival of a full squadron of kinetic soldiers at the Rodgers Allforces Base didn't go unnoticed by the considerable and vocal segment of Pacifist Party members in Culver. After all, in their eyes we represented most of the qualities they detested in their fellow humans: arrogance, aggressiveness, sexism, the ability and readiness to kill, and a general disregard for the rights of others. At least, that's what *they* said.

The chants of some fifty Party members came to us as we were led from the auditorium by some of Glassner's flunkies. They had gained admission to the base by using the '86 Assemblage Act, and advanced on us shouting choice obscenities, as well as the currently favored anti-war slogan, "Ground the pigs, stop the war; we don't wanna fight no more!" It's been a long time since they came up with any really catchy pieces like, "Hell no, we won't go!"

The group stayed a discreet fifty meters away, but when they caught sight of our shoulder insignia —

red lightning over a white sun — the cry of “Sky pigs!” rang out, followed by a shower of tomatoes. The average Party member really hates our guts.

I’d been through this before, even getting pelted by excrement while with the 929th squadron in Denver, so I knew enough to ignore it. But a couple of the newer recruits and some of the more irascible vets made a short charge and tossed a few words ahead of themselves. Balincopf shouted the soldiers back into line and delicately reminded us all that we were at Rodgers to defend and protect our fellow citizens, not to brawl with them.

Nothing more came of the confrontation, in any case, since the demonstrators had violated the Assemblage Act when they threw the tomatoes, allowing the base-patrol plenty of reason to hustle them through the gates.

I could hear Glassner apologizing to Balincopf as we entered the quartering hall, and it gave me a laugh to wonder whether the Colonel really liked kinetic displays that much or was having nightmares of hostile golden globes.

“An unsavory display, don’t you think?” Danny Goodnight asked as a corporal showed six of us to a quad central.

“They’ve got their principles, one supposes,” I replied, charitably.

“Crap!” added Dom Rignialdi.

“They’re a bunch of half-witted hate artists.”

Goodnight, who was certainly the most easy-going kinetic pilot I’ve ever met, shook his head and smiled. “Let’s not be too unkind. I believe that there is more fear and sadness weighing against our acceptance than hate. They’re truly disgusted with fighting, no matter who initiates it.”

“Come on, Danny . . .”

Goodnight stopped the protest with a friendly wave. “Hear me out, Dom. Back in what I fondly call the Paranoid Fifties, it was policy to believe that any intelligence viewing us from the stars was malevolent, greedily contemplating our fertile world, just as we were sure that the Russians were eager to drop the Bomb on us.

“Then, with the Sixties, we began to realize — to hope, actually, that any civilization advanced enough to conquer the inconceivable vastness of space would have matured far beyond the madness of war. Perhaps we would meet friends who would help us along the path, rather than BEM’s.” Danny sighed. “And now, after thirty years of hope, we have contacted that first alien species . . . and they have attacked us. It’s not hate, Dom, but crushing disappointment.”

Nancy Nelson snorted a laugh and said, “Preserve us from philosophical drunks,” before leaving

the hall for her newly assigned quarters.

But Rignaldi wasn't satisfied. "Then why the hell do they throw the garbage at *us*? Why demand that we stop a 'war' that's defending *them*?"

Goodnight shrugged. "I have no answer for that, my friend..."

"That's a first," I broke in.

"...other than to relate a story which I once heard told by the descendants of an American Indian tribe. It's sort of a semi-religious, pre-Columbian recounting of the origin of a higher Man. It seems that in the early days of the world one hundred perfect golden lions descended from the father Sun."

"What American Indian ever saw a lion?" demanded Rignaldi.

Danny grinned. "Mountain lions, cougars, whatever you choose to call them. Anyway, some of these lions became restless with their lot as animals; they were perfect in nature, but they felt that they could reach yet a higher state as the first Men to walk the world. So the Sun granted their plea and changed them from perfect animals to perfect, if innocent, men and women, leaving only seven lions who realized that they were yet needed as they were made. When the humans began to live their higher lives, the remaining lions helped them against the predators, bear, eagle, and others.

"But the Men were not satisfied.

They were ashamed that even a few of their number had refused to 'advance' and dealt in killing, while the humans were certain they could live in peace with all of nature. They harassed the lions, scolded and badgered them to drop their bestial ways and become of the superior form. The lions refused, for they knew that, as rough and evil as they might appear, they were necessary."

It was a thin allegory, but I was beginning to understand it.

"Finally, the Men delivered an edict: the lions could join them as humans and live upon the earth or return forever to the Sun. With no other options, the lions left, giving the Men to their own defenses. Without the knowledge of fire or tools, the only perfect people to reside on the world were soon devoured by their many imperfect enemies, and now just the lesser breeds survive. At least, that's the Indians' story."

Rignaldi chuckled and two other listening pilots walked away trailing explicit comments concerning all mythic dissertations.

"So what was all of that for?" Dom asked.

"Nothing. I simply believe that we are the seven lions." Danny looked to me for support. "Is that your opinion, Russ?"

Ever the diplomat, I answered, "All I know is I need a shower. Tomatoes don't wear well on me."

I left him to Rignaldi's less than sympathetic review.

The day went swiftly. Following the obligatory meetings with the top dogs in each division, Balincopf allowed us to check down our sprits and then go up for a feeler-out with the sky around Culver; we had plenty of aerial charts to study, but there's nothing like a personal check to give you a feeling of orientation during a pitched night battle. The Ape split us into watches and two-a-day patrols with his usual democratic probity — column A and column B — but refused to grant liberty into the city.

The only waves created on our first day at Rodgers were stirred up by a female lieutenant colonel who was ticked off that ninety-five out of every hundred military kinetics are male. She had apparently expected that her rather edged interrogation, colored with its righteous indignation, would reduce a subordinate to quivering bootlicking, but she must have been unaware of Balincopf's service record of punching out at least nine superior officers, including two women.

The Major was surprisingly restrained, though hardly quivering, as he explained that psychokinetic ability is present to some degree in practically everyone, but the intense, angry, *violent* energy seems to favor males. That was Balin-

copf's theory, though nobody actually knows to this day. Testosterone levels make up the most popular current theory in scientific circles.

Being assigned to the second watch, which was "on call," so to speak, from eight a.m. to three, I decided to start my sack time early and was dead to the world when the alarm came.

It sounded like a banshee in an echo chamber and drove me from the bunk and into my flight suit before I realized I was awake.

Balincopf's guttural roar overrode the alarm, ordering, "941st to hangar tubes! Full attack in progress, so move your tails!"

I stumbled out of my quarters and into Pug Nelson. She's about the size of an elf, but her body is anything but elflike. She was only halfway into her suit when we collided, and clearly making fools out of everyone who believed the testosterone theories.

"I like your tailor," I said hurriedly.

She ignored the crack and struggled into her sleeves while we sprinted down the hallway with the rest of the disheveled squadron. Upon reaching the transfer tubes, we jumped in, eight to a capsule, and snapped the casing shut only a second or two before Balincopf triggered the ignition to launch us on our pneumatically-powered ride to the underground hangars.

"This is my first night fight," Pug told me after the initial acceleration released us. "I don't know if I can handle it, Russ."

I laughed, a little too loudly, as expectation pumped adrenalin into my blood. "You've been on maneuvers. All you've got to do is switch your screens to radiant and lock in on a BB."

"Hell, Russ, I know that, but tonight I ... well, I've got four kills and I was hoping to go ace my next time up in case it's my last chance. Night bogeys have to be harder to hit, don't they?"

"You worry too much," I said, personally aware that the "last time up" syndrome is almost universal among battle pilots. "Besides, I got three of my kills in the dark, and Balincopf's an ace six times over; how many of those do you suppose came at night?"

"I guess you're right," she answered. But there was no conviction in her tone.

Deceleration hit us about then. Rail brakes assisted the air cushion, and the eight-kilometer trip was over inside two minutes. If Balincopf and the other gung-ho jocks had their way, we pilots would eliminate the safety factor and sleep *in* the sprits, but the government brains figure that since there are only something over two hundred of us trained kinetics in the nation, they would prefer to have us safely away from our craft

in case the globes sneak attack the hangars.

As they were doing. Though the sprits were stored within a range of foothills away from the nuclear reactor and the greatest care had been taken to camouflage their location, the globes had somehow sniffed them out and begun an attack. Six of the shiny balls were wheeling over the buried hangars, laying down electron discharges and gouging out long furrows in the heavily forested landscape. The globes were definitely dangerous to aircraft and ground installations, but they didn't carry the firepower to blast out a heavily fortified underground base in a short span of time.

Still, when we popped out of the capsules, it was to a cacaphony of explosions and screamed orders. A standby group of marginally trained pilots (non-kinetic) were attempting to taxi the sprits to the exit and doing a fine bad job of it, with assorted collisions, stallings, and early lifts. I picked out my "horse," which wasn't that easy in the flashings and fadings of the shorting electrical lights, and ran toward it as an inexperienced private continually hit the lift controls and rabbit-hopped it into the six-meter-high ceiling. It's difficult to seriously damage a sprit, but that sucker was certainly trying his best.

"Hey, let up on the righthand control and push forward on the

left!" I shouted at the bewildered kid.

"Gotcha, sir!" he yelled back, nodding to me.

The sprit bucked upward and smashed into another steel rafter.

"Let go of the lift control!" I screamed.

"Right!"

He twisted the full lateral into the lefthand control and sent the craft into a fast, counterclockwise spin.

"Get out of the horse!"

He managed to stop the spin, and stuck his head out of the cockpit. "Huh?"

I leaped to the side ladder and grabbed a fistful of his uniform. "Get out of the horse, you damned idiot!"

His feet cleared the side of the sprit in a jump, and he scrambled out before I could swing at him. I pulled myself into the seat and sealed up. Reestablishing equilateral control, I swung the nose toward the exit in the side of the hill and dodged my way out. Sitting duck described my situation when I reached the opening with the marauding BB's directly overhead. I slammed into a hard right bank, lifted vertically, and tried to anticipate where the first electron bolt would hit me.

It slapped into me in the left rear section, but was so indirect that my hull's reflective qualities bounced the potential damage away, which was another helpful attribute

stolen from the globes themselves. That miss gave me time to right myself and turn on my attackers.

Utilizing the four-shot screens on my control panel, I was able to pick out the six BB's with no trouble, and though my night-probes made me easily detectable to them and they were my equals in flight maneuverability, I held the most important advantage in my superior firepower. I was one of the first sprits out, and it fell to me to stick around the hangar exit and clear a path for those following.

A globe suddenly took notice of my presence and flashed forward. I flipped in the onboard computer to allow my craft to match its automated movements and slipped my hands into the firing gloves, where a pair of auxiliary control knobs nestled in my palms and allowed me to manually override the computer at any time.

The globes can only fire their bolts along their equatorial seams. And about a second and a half before they do so, a basketball-sized spot glows red where the bolt will discharge, as if the outer hull momentarily resists or builds up the energy to be released. The globe in my forward screen did just that, and I pulled upward on both knobs. The obedient sprit leaped thirty meters before the electron bolt slid harmlessly beneath me.

With a grin, I concentrated my own forces and sent a double beam of brilliant green energy tearing

out of the nose of the hose directly at the hovering globe. Poor old Isaac Newton would never understand why I wasn't pushed through the back of my own craft, but kinetic power produces no recoil. The round target at which I had fired bounced swiftly aside, and my beams blinked off after they had passed the mental limit I'd set upon them. There's really nothing like the feeling of hurling pure psychokinetic energy from your clenched fists, even when you miss.

But the exaltation of attack was quickly washed away by the counteroffensive set up by the globe. A second bolt jumped up at me, licked my tail, and raised the sprit's surface temperature nearly three hundred degrees. It was enough of a miss not to have caused any real damage, however, and I stopped the next discharge by firing directly into the pre-release glow. This meant that the energies intercepted and neutralized one another in a brilliant fireburst of green and blue.

Before the globe could continue its attack, I spread my gloves and shot separate beams to either side, knowing that the craft would lose its options of lateral motion. I gambled that the craft would bob skyward in an effort to escape and reengage me, so I jerked my still firing fists up and together in an inverted V form. The gamble paid off, and when the BB sailed upward, my concentrated beams

clipped it about forty-five degrees into its southern hemisphere, blasting out a two-meter diametered hole.

That wasn't nearly enough to disable the globe — I've seen them limp away looking like a round of Swiss cheese — but as I readied a second assault, a red flash zipped from along my left side and scored a centershot on the wounded craft. It flamed like a miniature sun and sprinkled the ground with burning debris.

"My kill," said a man's voice over the radio.

"Balincopf!" I shouted. "I had that set up, you stupid hotdog! If you still want that fight, you've got it —"

"Shut up, Sinclair," he answered crisply. Then, over the general frequency, he added, "Attention all pilots: into the air! The bogeys are retreating toward the reactor, and we're twenty-five kilometers behind! Check for depolarization; I don't want any of you d.a.'s hatching in the middle of a dive. Everybody clean?"

There were no nays.

"Okay, everybody take your pills."

I slipped two standardized capsules out of their receptacles in the panel and popped them into my mouth. One was a concentrated thalamacortic disinhibitor, the same sort of drug which was used to heighten kinetic ability during our training period, and was used

as a booster shot to assure production during battle. I don't need it anymore, but I swallow the dose just to keep Balincopf happy. The second drug was merely a caffeinated stimulant designed to keep pilots on their toes while in the air. A hot, carbonated feeling spread outward from my stomach.

"Let's get at 'em, and I want kills this time, not just hits!"

As the other sprits billowed out of the hangar like silver bats swarming from a cave, Balincopf, Endicott, Graham, and I cut east after the retreating globes by locking in on them by radar. Four of the BB's turned back to stall us, but I wounded one and Dick Endicott took out another with a clean hit in the seam which he held on long enough to slice straight across.

We came upon the reactor in just over a minute (our stasis chambers allowed us to proceed at such speeds and slow as quickly without being reduced to liquid hamburger), but the sight was pretty: four globes were anchored above the main portion of the complex, their shimmering energy vortices faintly visible, and twenty others had peeled off to defend against us. It was the largest collection of EFO's I'd ever seen.

"About time the calvary rode in," radioed a voice from the ground. "They've drained us five per cent already. What kept you?"

As usual, Balincopf ignored

him. "There they blow, folks, so pick one out and attack. With this many opportunities, I get ten trophies delivered or I kick some cans; remember that."

"You're all heart," I told him before detaching and going after a candidate hovering nearly twelve hundred meters up.

I was feeling good, primed for the attack, and this enthusiasm led to an expensive bit of overconfidence. When I zipped up in an effort to cut a gash in its underbelly, the globe failed to react typically. I had my stereo going full volume with the western theme from "The Big Country" and the globe centered in my forward screen, when the target suddenly shot downward on a collision path with me, a maneuver that the globes *never* performed.

I pulled up sharply, and the BB followed the smart tactical move in shooting underneath and spitting a blue bolt at my belly. My lower screen blinked off, and I waited for the cellophane-crinkle noise of a punctured sprit. It didn't come; apparently an instinctive slide to one side as I rode over the globe had saved me.

But I wasn't out of the woods yet. The BB, at my rear now, had fastened itself to my tail with only a three meter separation, so I was forced into a jerky fishtailing motion to keep it from having a clear, close shot. I flipped one-eighty and watched as the stars

were suddenly under me, but the globe followed like a dog with his teeth sunk in. Flips, spins, everything failed to shake the tenacious machine, while the desperation soaked out on my forehead and armpits.

Finally, I took a chance and dived for the earth, with a silent prayer that the computer could stop me just before I crashed through the upper branches of the trees. It did, with two meters to spare. When I flipped again, the globe followed, automatically stopped itself before slamming into the trees, and failed to compensate for my continued flip. It was a beautiful sight that rolled into my forward screen, and I unloaded with both hands against the yellow hull.

The globe bounced away, but I had it burned enough to follow up with a solid shot near the seam. It shuddered and began to spew black steam. One final blast into the gaping tear cut the raider to blazing shards that threatened to scorch a few pines below.

I whistled softly. "And that was almost the night Russ didn't come home."

Balincopf's voice broke in on "The Big Country": "That was very sloppy, Sinclair." Somehow, that man can fight eight BB's and still watch twenty-one other battles at the same time.

"Maybe, but it was also number

sixteen for me, Balincopf," I answered.

"Barely." He flipped off his radio and went back to chasing bogeys to the tunes of Mozart's *Le Nozze di Figaro*.

I started sliding back toward the reactor to check for any globes that might have been still siphoning off energy, but a bright flare just above my horse cut me off.

"I got it!" Lem Graham screamed in triumph. "That's number ten, I just doubled!"

That gave the 941st three triple aces and five doubles, excluding Balincopf's thirty-two kills. Our bunch might be an insubordinate, psychotic collection of foulups, but you've got to give us one thing: we're damned good.

The reactor was clean, swept off by four or five guys, so I circled upward to where most of the action was situated and looked for strays. For fifteen minutes, I was unable to locate an opponent, but that wasn't unusual, since sprit/globe confrontations are basically one-to-one affairs that can cover eight kilometers or more. Eventually, Fel Fernandez lost a chase and I picked up his rabbit, not to rob a rookie of his first kill, but to take out a deadly raider who could be breathing down my neck next time.

I lost it, too.

The first real trouble started with Byron Hacker, another of our five rookies. In executing a one-

eighty flip, he also shifted to rear drive and spun upward like a broken top; with extraordinarily bad timing, he rolled in front of an electron bolt at the second it was discharged at still another sprit. Our aircraft reflect and withstand the globes' energy pretty well, but at that range, it was too much to ask of his horse to shrug off the hit with no damage. As it was, the discharge knocked out his electrical system.

"Major Balincopf!" he cried hysterically. "My screens are gone — I can't read my dials!"

"Who is this, Baxter?" demanded Balincopf.

"No, it's Byron Hacker and I'm flying blind!"

"Blind my butt! You've got a cockpit shell, haven't you?"

"Yeah, but —"

"Use it! Go up — that's *toward* the stars — and get out of the battle. Mishima, take him back to the base and watch for strays. Go!"

I finally caught another open BB and chased it up and down the scale until finally wedging it against the oncoming blips of two other sprits. "Okay, you meatball, this is number seventeen," I muttered, but a light yellow beam blasted the globe an instant before I fired.

"Who flamed that globe?" I yelled. "I set it up!"

"Rus?" came Pug Nelson's reply. "I'm sorry! I thought it was a stray, I swear!"

My anger evaporated. "Okay, okay, shut up and celebrate; you're an ace!"

It didn't all go so smoothly, of course. We lost another rookie named Sammy Baxter less than five minutes later when he was scissored by a pair of globes and had his horse knocked completely dead. Everyone expected him to panic, naturally, but he showed us an amazing coolness by strapping on his pack rocket, ejecting, and calmly floating down out of danger. To top it all, when a globe zipped in too close for his comfort, Baxter blasted four quick holes in it with his orange beams and sent it to the ground. Imagine being able to tell your grandchildren about how you got your first kill while hanging practically helpless in a sky full of BB's.

Number seventeen finally came up for me on a random, long-distance potshot. It was the cheapest kill I ever made.

"Damage report," Balincopf ordered, as the attack finally began to wane after over three-quarters of an hour. I had the dead belly screen, Dom Rignaldi sustained two moderate holings in his rear section, and Danny Goodnight suffered almost fifty percent loss in stasis quality, but no one was in immediate danger of crashing. At least, we didn't think so.

With the swiftness of a falling meteor, three of the remaining BB's clustered around Art Frias, a

veteran campaigner with eighteen kills, and gutted him like a dead fish. His sprit dropped like a stone.

"Eject, Frias!" said Balincopf with a rare urgency. "Get out of that can, now!"

The sprit smacked into the hillside and erupted.

"Did he get out? Anybody see him eject?"

"I thought maybe I saw a rocket exhaust up there," someone said hopefully.

Chad Emerson, a tall, lean, silent man, who was also the only squadron member Balincopf had never physically threatened, said in a quiet tone, "He didn't get out."

We had lost a brother.

Balincopf had been ready to order us off the retreating survivors, but he knew we all needed revenge, so he led us on a last charge that covered three states and took us up to eleven thousand meters. We got four more of the bastards and came in pumped up like Thanksgiving Day balloons.

It was quite actually impossible to expect the 941st to creep silently back to our beds after a battle that had resulted in nineteen kills. Balincopf knew the futility of even considering it. So, despite the fact that it was midnight and half of us had to be on duty at eight, the gates of Culver City were opened to us, ready or not.

Following missions that don't cost us four or five of our number

(and there have been those), we kinetics tend to move through our R and R in large packs, not unlike the wolves that various groups labeled us. That night was true to form, and an hour after landing fourteen of the squadron had gravitated to a place that called itself a restaurant, but was known to have a lousy reputation with all of the best temperance leagues. The battle was being replayed with sparkling highlights before enthralled patrons, many of whom were female and very thirsty, and every man was the hero whose kill had turned the tide.

"You gotta imagine," Buck Wheeler was saying between gulps of beer, "there I am, maybe a thousand meters up, 'Foggy Mountain Breakdown' rattling my windows out, and these two BB's come at me from ten o'clock..."

I shook my head and took another swallow.

"What's the matter, sport, didn't you have a hand in saving the world from the insidious menace?" asked a nicely proportioned blonde who had been insuring much of the profits since we'd come in.

I laughed. "I'm just a minor supporting character; too ugly for stardom."

"I wouldn't say so," she replied, taking the stool next to me.

"And how long have you been possessed of such exquisite taste? What're you drinking?"

"A gin and tonic, Scotty," she said to the bartender, letting me off easy. "No kidding, though, you fellows had the whole town out watching that lightshow. It looked like a technicolor version of a Dali painting; didn't you make any 'kills' tonight?"

"Two."

"You're certainly a modest hero. Doesn't it excite you?"

I had to shrug. "It gives you a good feeling while you're up there. You know that you're doing your job, and numbers *do* count, but when you consider that ... well, they're only machines. We're dying and they're just nuts and bolts."

"So sad. This is a celebration, a rite. Why not join your friends, because everybody knows that you fly-boys are devil-may-care rakes who live to fight and carouse." With mock seriousness, she pointed to further down the bar where a drunk Jessie Marns poised like a mutated eagle trying to reenact a one-eighty flip. He nose-dived into the floor.

The drinks seemed to hit me all at once. "You're the best psychoanalyst a lunatic could want," I said, pulling her to me.

The "enemy" had been unobtrusively infiltrating the restaurant for at least forty minutes before anyone had reason to notice. I thought once or twice that the place was inordinately crowded for so late, but, with typical conceit,

laid the increase to the attraction of live kinetics. Unlike the emotionally sick love/hate Sixties, Pacifist extremists aren't easily identifiable by their appearances — except for the few who adopt the shaven and tattooed scalps — so you never know who's going to try to lynch you in the middle of a quiet park. But then, kinetics look almost normal, too, out of uniform.

When a young girl produced a portable movie camera and began filming our varied antics, a few eyebrows went up, but a male friend quickly told us that she was merely recording our visit for posterity. Dick Endicott and Pug Nelson even did their jitterbug routine for them.

The trouble began when another young man, who had also been drinking, began his rather original improvisations for our benefit. He was an archaically long-tressed article, and he enjoyed showing us an acrobatic style of comedy that included falls and ear-wiggling. Unfortunately, all of the comedy was at our expense.

"A sky pig proudly displaying the extent of his artistic ability," he said loudly, and then he dropped his pants. This brought roars from thirty of his friends, but only cold stares from us.

"A sky pig shows his powers of conversation." The man grabbed a beer from the bar, poured most of it over his face, and fell limply to

the floor. Again the reactions were sharply divided, and I saw a few guys shifting around angrily.

"A sky pig at home in..."

"Hold it!" broke in Kuniaki Mishima. "Let me; a Pacifist flower blowing his brains out." Pressing one nostril closed, he blew his nose. That brought wild cheering and applause from the soldiers.

"Yeah, how about this," Lem Graham called over the noise, "a Pacifist lighting a smoker." Taking one from his pocket, he held it between the middle and forefingers of his right hand and flicked a small lighter beneath his fist. By utilizing a limited portion of his kinetic ability, he caused his entire hand to glow a brilliant, flickering red, as if it had blazed up from the lighter's flame. The rollicking appreciation returned.

"Shut up, you fascists!" screamed one of the Party girls. The coldness came back into the atmosphere, and Scotty the bartender glanced nervously at the wall clock.

"Hey," the blond whispered to me, "we don't need a fight, really, don't bust the place up!"

"Then you'd better start packing away all of the breakables," I advised her.

"Now, then, let's not get hostile, folks," said Danny Goodnight, ever the level-headed peacemaker. "How about drinks all around, Scotty?"

The bartender nodded quickly, but one of the larger Pacifists refused the gesture by proclaiming, "I don't drink with pigs!"

Dom Rignaldi answered, "And I don't drink with worms!"

But Goodnight didn't give up. "Okay, we don't drink ... uh, we talk, that's right, we talk this out and delve into the causes behind this ... animosity."

"It's natural to hate murderers," said the Pacifist.

Rignaldi took offense to that. "Hey, just where do you get off, buddy? Don't you know we're up there playing moving targets to save *your* tails?"

"Who asked you?" the other screamed. "We don't *want* you 'protecting' us! Those spacecraft are here to keep us from poisoning ourselves right out of existence with nuclear power, that's why they're attacking the reactors!"

"Bullcrap," said a calm voice from the corner of the bar.

Everyone shut up and turned to look at Chad Emerson, who sat with one girl and one bottle of whiskey. When the tense quiet continued, he slowly removed the unlit stub of a cigar from between his teeth and swallowed another shot. As I've said, Emerson was not a talker, but he commanded a lot of respect when he did speak.

"If you want to keep a man from committing suicide, you don't steal his bullets; he'll use a towel to hang himself." He took

another leisurely drink, but no one took the opportunity to speak. "You people hate us because you're afraid. You're more afraid of us than the globes."

"*Afraid of you?*" laughed a Pacifist. "Why in hell would we be afraid of you?"

Chad considered the question. "A soldier, a normal soldier can put away his guns, a pilot can quit flying bombing missions, but we kinetics *aren't ever and never can be unarmed.*" To illustrate, he blasted a small shot glass at the far end of the bar. Then he said, "You'd rather face an enemy from Out There than have us on the streets with you."

Finally, a Pacifist revived enough of his ire to ask, "So you think we're just ignorant, frightened kids, right, Cowboy?"

Emerson put the cigar butt between his teeth. "No," he said. "I think you're fools."

"Uh, closing time, everybody," Scotty said.

"It isn't two, yet," a kid from the Party side of the bar pointed out. "You're not throwing us out for these pigs, are you?" He walked to the counter.

Danny Goodnight smiled and placed a restraining hand on his shoulder. "We'll all go. It is pretty late and..."

The boy hit him with a picture perfect right to the jaw. That was the kickoff, as kinetics and militant Pacifists swarmed into one an-

other like colliding ocean waves. Smart guys leave when saloon brawls start, but while I don't think of myself as a troublemaker, I haven't walked away from many brawls, either.

The cardinal rule of multiparty fights is: stay away from anyone swinging objects. Fists and feet are bad enough, but a man with a pool cue, whiskey bottle, or other such device can level a brick wall, so avoid that person outright, unless, naturally, you're wielding something bigger or heavier. The adherence to this rule still left me with many willing opponents, since we soldiers were outnumbered two to one.

Another point to remember is that most battlers in a mass argument expect to take head punches, so if you can land to the body, often a man will wilt before your eyes. And it saves your knuckles, too.

Scotty was not inexperienced with fights, but he was unable to dissuade us, so he called the police. I was looking for the first warning lights and the nearest exit when Major Adam Balincopf kicked open the door, took in the situation, and started cursing like a streetcorner politician.

"Break it up, you empty-headed baboons!" he shouted, knocking heads all about him. "This is an alert, a red four alert!"

That stopped nearly all of us soldiers like an electric shock. A red

four meant that another attack was underway, and not just on property, but high population centers. But the globes had never attacked a city before, only reactors!

Most of the Pacifists, unfamiliar with military terminology, continued swinging, until Balincopf started grabbing them two at a time and tossing them over the bar counter. Eventually, we all stood wheezing and bleeding, except for one short, thick-waisted Pacifist who was pounding a prone rookie named Byron Hacker. Hacker was screaming at the top of his lungs.

Endicott and I started forward to pull the enthusiastic heavy-weight away, but before we reached him, Hacker managed to kick the other man off and sit up. His face was chalk white with rage everywhere it wasn't blotched with blood, and his eyes were literally wild, but when he raised his right hand and pointed his trembling forefinger at the fat boy, there was no doubt about his intentions.

"Hacker, no!" roared Balincopf.

The violet ray flashed into the Pacifist's chest and slammed him back ten feet through the front-street window. He wasn't killed, but only because Hacker had used a punching fingershot.

"Oh my God," someone said hoarsely. "He did it."

Hacker stared in disbelief at his own handiwork, the first recorded instance of a kinetic soldier using

his ability against another human, and then jumped to his feet and ran through the massive hole in the window. He'd gone Renegade, as we now call it.

Pug Nelson and two others started to follow, but Balincopf stopped them. "Let him go! This is it, war! Thousands of those damned globes have started attacking every major city on the east coast and probably the whole nation by now! We haven't got time for Hacker now, or doctors or anything else; somebody get Good-night off the floor and then get your butts to the hangar!"

The Pacifists watched in stunned silence while we left.

My face was puffing, my leftside ribs hurt, and I thought that I'd swallowed at least one tooth back there in the bar, but none of that mattered when I slipped into my horse. Excitement, not pills, killed the pain.

And suddenly I heard the voices again.

"... we are the seven lions."

"You'd rather face an enemy from Out There than have us on the streets with you."

I hoped that this war was Mankind's initiation into space, because I realized now that some of us fighting it would never be able to live on Earth again. We were formed to save a world that could not receive us, so the lions would be forced to go back to the Sun. ●

Dear Jonathan and John —

UNEARTH 5 came in today, thicker & slicker than ever. I think the only appropriate word for what you guys are doing is *astounding*. I still don't quite believe that you're doing what you're doing, but you continue to have my congratulations, my good wishes, and my awe.

Best,
Robert Silverberg

Dear Editors:

I like to read the editorials, the author & artists profiles, and letters-to-the-editors. How about some sequels — Mike Baron's wrinkled old lady, Mrs. Millman, and Steve Vance's jailhouse hero "Monk." David DeWitt's story, "Midwatch" is a perfect example of why science fiction is for men the way Gothics are for women. Unisex is just a word printed on t-shirts.

I wish you would encourage stories with the depth and concern of social problems. In March, once again, begins the Seal Hunters' bloody slaughter of the baby Harp seals. Our Farmers, who due to rain and drought have had poor crops are now losing their farms, and protesting to a strange government in Washington. There are so many worthwhile subjects that young writers should be tackling.

I make rather good coffee, bowls of apple crisp, take my welsh corgis and gray tomcat hiking in the woods, and would like penpals. Anyone feeling like writing can get a cheerful reply from me. Write to me at 2180 East Webber, Sarasota, Fla. 33579.

Miss Jackie A. Moore

LETTERS

To the editors:

When I found UNEARTH at the "Illustrated Store" in Portland, I was intrigued by the concept and decided it was worth my support. In spite of all the critics' predictions of a quick demise, it has survived and printed some very promising — if sometimes uneven — work.

I am not a fan. I follow sf partly as escape literature, partly as a literature of ideas — especially religious and social philosophy, my primary interest, and historical speculation, my abiding passion.

Not being a fan, I have little interest in conventions — and I have an active dislike for most of what I have read of and about Harlan Ellison. But his guest editorial in the current issue makes me wish I could be at Iguanacon to be part of what he is trying to do there. An old, conservative friend, when I teased him about his activity in women's causes, told me he was not interested in women's liberation but in liberation of the human race from all its racist, sexist, and nationalist prejudices, so that all of us might be free. ERA is one step down that road, as the late Dade County Ordinance was.

Right on, Harlan! I can't be there, but I'm glad you will be and that you will be doing something very important while you are.

Regards,
J.S. Mead

UNEARTH,

Allow me some comments. I do not care for Ellison. His stories are disturbing, disquieting. There is no question in my mind that he is the most dangerous man in the country, and I

think he would consider that a compliment. I am certain that he is proud of the fact that when "they" take over, he will be the first one shot.

I know most of the game companies advertised and would advise you to dump Galaxy-Foundation. Their games are unplayable.

I really do like *Unearth* and may someday send in some fiction. Maybe even the Ellison contest. That would be something.

S. V. Cole

Dear Mr. Landsberg,

I have seen every issue of UNEARTH, and I must say that the improvement from #1 through #5 has been astonishing. Everyone there must be doing a topnotch job. I have begun spreading the word about UNEARTH myself, suggesting people send in mss., take out subscriptions, etc.

Thanks for making this market available to new writers. It's almost enough to make me wish I hadn't sold nine stories already. (Almost.) Keep up the good work.

Sincerely yours,
Joseph Patrouch, Jr.

Dear John and Jonathan,

I've just finished reading "Downward to Darkness," by Mr. Sullivan. Fantastic. I can't believe how well he wrote the story. It reminded me of Dickson's *Time Storm* near the end, and I loved *Time Storm*. I commend Timothy on a great job; the story has everything I could ever ask for, and I'm certain most of your readers enjoyed it.

Best,
ED Chambers

Inearthed: Contributors

JEFF FRANE lives in Seattle. His book reviews have appeared in, among others, *Locus*, *Delap's F&SF Review*, and the *Seattle Times*.

ROSEMARY HERBERT teaches courses in both detective fiction and science fiction. She is currently working on her own detective novel.

FRED KNECHT, JR. has attended the U. of New Hampshire and the New England School of Art and Design.

NEIL OLONOFF was born in Brooklyn, moved to Tulsa at age 15, and attended Oklahoma U. He has been a psychiatric aide, sports reporter, exporter, and while living in Sao Paulo, Brazil, an English teacher and translator. He now lives in Boca Raton, FL, and is Technical Counselor in an employment agency.

RUDY RUCKER has a Ph.D. in Mathematics (specialty: set theory) from Rutgers. He is the author of the book *Geometry, Relativity and the Fourth Dimension*, and teaches math at the State U. of New York at Geneseo.

STEVE VANCE's first story for *Unearth* was "Conjugal Rites," in issue #5. His first novel, *Planet of the Gawfs*, will be published shortly by Nordon Books.

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